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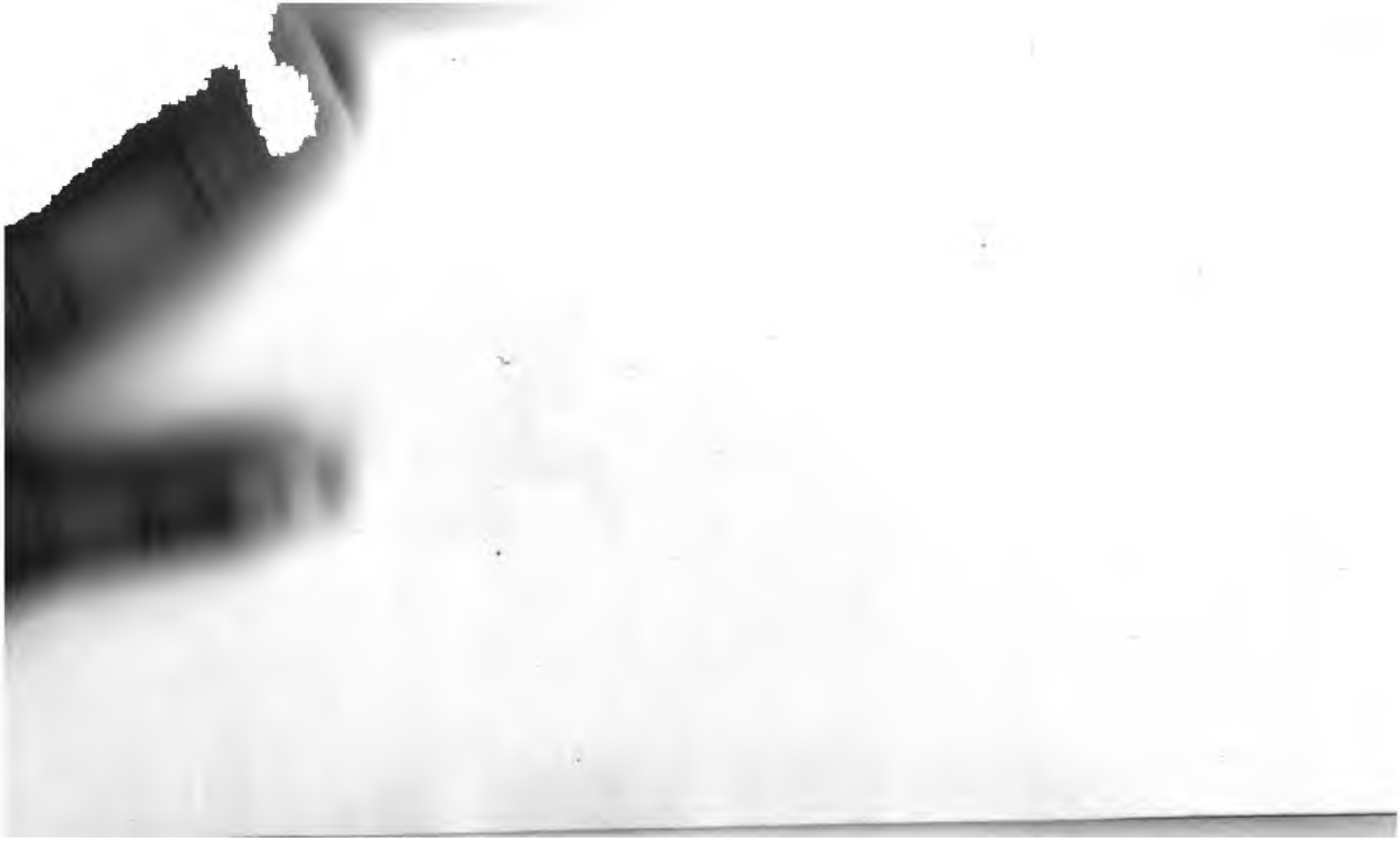

SANITARY AND STATISTICAL REPORT

OF THE

SURGEON-GENERAL OF THE NAVY

FOR

THE YEAR 1879.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
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BUREAU OF MEDICINE AND SURGERY.

NAVY DEPARTMENT,
BUREAU OF MEDICINE AND SURGERY,
November 1, 1880.

SIR: In compliance with your order of the 22d ultimo, I have the honor to submit the following report of the sanitary condition of the Navy during the year ending December 31, 1879, estimates of appropriations required for the service of the fiscal year ending June 30, 1882, and the condition of the hospital fund.

Very respectfully, your obedient servant,

PHILIP S. WALES,
Surgeon-General, U. S. Navy.

Hon. R. W. THOMPSON,
Secretary of the Navy.

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REPORT

OF

THE SURGEON-GENERAL OF THE UNITED STATES NAVY

FOR THE YEAR 1879.

The varied and important duties of the medical officers of the Navy have been performed with intelligence and zeal, and when called upon for other than strictly official service in the cause of suffering humanity, as in the late epidemic in the South, they have responded with commendable alacrity.

The hospitals are being repaired and put into the highest state of efficiency that the very limited appropriations will allow.

The growing importance of the naval station at Mare Island demands more ample hospital accommodation than is at present available, for the reason that the entire medical staff are quartered in the building; and, for the purpose of removing this embarrassment, I submit an estimate for the erection of suitable quarters for these officers, which I trust will meet with your approval.

The following are the estimates of this bureau for the fiscal year ending June 30, 1882:

Estimates of appropriations required for the service of the fiscal year ending June 30, 1882, *by the Bureau of Medicine and Surgery.*

Detailed objects of expenditure and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year, ending June 30, 1881.
SURGEON'S HOUSE, MARE ISLAND, CAL.		
For erecting a dwelling for the use of the medical officer in charge of naval hospital, Mare Island, Cal., and for the necessary out-buildings, fences, &c. (submitted)	$25,000 00	$25,000 00
BOILER HOUSE, MARE ISLAND, CAL.		
For erecting a new boiler house for the naval hospital, Mare Island, Cal., (submitted)	3,500 00	3,500 00
MEDICAL DEPARTMENT.		
For support of the Medical Department, for surgeons' necessaries, for vessels in commission, navy-yards, naval stations, Marine Corps, and Coast Survey (appropriated 21 Stat. at L., p. 86, sec. 1)	45,000 00	45,000 00
NAVAL HOSPITAL FUND.		
For maintenance of the naval hospitals at Portsmouth, N. H., Chelsea, Mass., Brooklyn, N. Y., Philadelphia, Pa., Annapolis, Md., Washington, D. C., Norfolk, Va., Pensacola, Fla., Mare Island, Cal., Yokohama, Japan (appropriated 21 Stat. at L., p. 86, sec. 1)	50,000 00	50,000 00

Estimates of appropriations required for the service for the fiscal year, &c.—Continued.

Detailed objects of expenditure and explanations.	Estimated amount which will be required for each detailed object of expenditure.	Amount appropriated for the current fiscal year ending June 30, 1881.
CONTINGENT.		
For contingent expenses of the bureau, freight on medical stores, transportation of insane patients, advertising, telegraphing, purchase of books, expenses attending the medical board of examiners, purchase and repair of wagons, harness, purchase and feed of horses and cows, trees, garden-tools, seeds, &c. (appropriated 21 Stat. at L., p. 86, sec. 1)	$15,000 00	$15,000 00
REPAIRS.		
For repairs to Naval Laboratory, naval hospitals and appendages, including roads, wharves, out-houses, sidewalks, fences, gardens, farms, cemeteries, &c. (appropriated 21 Stat. at L., p. 86, sec. 1)	30,000 00	30,000 00
CIVIL ESTABLISHMENT.		
For pay of employés at the several naval hospitals, navy-yards, Naval Laboratory, and Naval Academy, under the cognizance of the Bureau of Medicine and Surgery (appropriated 21 Stat. at L., p. 86, sec. 1)	40,000 00	40,000 00
SALARIES.		
Chief clerk (June 15, 1880, R. Stat., p. 70, sec. 416)	1,800 00	
One clerk of class three (June 15, 1880, R. Stat., p. 27, sec. 167)	1,600 00	
One clerk of class two (June 15, 1880, R. Stat., p. 27, sec. 167)	1,400 00	
One clerk of class one (June 15, 1880, R. Stat., p. 27, sec. 167)	1,200 00	
One clerk (June 15, 1880)	1,000 00	
One assistant messenger (June 15, 1880)	720 00	
One laborer (June 15, 1880)	660 00	
Restoring messenger to rank and pay (submitted) *	120 00	
Restoring laborer to pay previously given (submitted) *	60 00	
	8,560 00	8,380 00
CONTINGENT.		
For stationery and miscellaneous items (June 15, 1880)	400 00	100 00

* NOTE.—Up to June 30, 1878, the messenger and laborer received $840 and $720, respectively, and the amounts "submitted" in this estimate are to return them to their former salaries.

NAVAL HOSPITAL FUND.

The condition of this fund is as follows:

Balance on hand October 1, 1879	$66,027 16
Transferred to the credit of the fund in settlement of accounts by the Fourth Auditor from October 1, 1879, to October 1, 1880	68,357 37
Credit by appropriation for the fiscal year ending June 30, 1881	50,000 00
Total	184,384 53
Deduct amount expended from October 1, 1879, to October 1, 1880	91,484 60
Balance on hand October 1, 1880	92,899 93

INSANE OF THE NAVY.

On the 30th September, 1879, there remained under treatment in the Government Hospital for the Insane—

Two commanders, 2 lieutenant-commanders, 1 passed assistant surgeon, 2 first assistant engineers, 1 late ensign, 11 seamen, 1 ordinary seaman, 1 ordinary seaman extra, 1 seaman extra fireman, 8 landsmen, 7 marines, 2 beneficiaries, 1 late seaman, 1 second-class boy. Total	41
Admitted during the year ending September 30, 1880: 1 passed assistant engineer, 1 ship's corporal, 6 marines, 1 ordinary seaman, 2 landsmen, 1 seaman. Total.	12
Total number under treatment	53

Discharged during the year ending September 30, 1880: 1 commander, 1 passed assistant engineer, 3 seamen, 1 ordinary seaman, 3 landsmen, 4 marines. Total. 13

Remaining at the end of the year: 1 commander, 2 lieutenant commanders, 1 passed assistant surgeon, 2 first assistant engineers, 1 late ensign, 9 seamen, 1 ordinary seaman, 1 ordinary seaman extra, 1 seaman extra fireman, 7 landsmen, 9 marines, 1 late seaman, 2 beneficiaries, 1 second-class boy, 1 ship's corporal. Total..... 40

SANITARY CONDITION.

The following tabular exhibits of the sanitary condition of the Navy differ materially from those of the preceding year. They are now presented in a manner that facilitates comparison with those of other years, as well as with those of foreign navies, a majority of the latter following similar statistical methods, and will, at a glance, reveal the special and relative sanitary condition of each ship in the squadron, as well as the character, kind, and amount of the several diseases on each station. It is much to be regretted that defective returns have prevented the preparation of a table that would have displayed the influences of naval life and of different climates on persons of various ages and grades. Measures have been taken, however, to secure in future the requisite information for this important object. Such tables of vital statistics will, in the course of a few years, furnish the materials for a complete sanitary history of every ship in the Navy, and also the character and importance of seasonal and climatic influences in disease. The consummation of these desirable objects will be greatly facilitated by thoroughness in the preparation of the annual reports of medical officers required by existing regulations.

For the entire service ashore and afloat there remained over from the preceding year 468 patients; 13,983 were admitted, of which 12,459 were discharged recovered, 1,415 were invalided, 96 died, and 481 were continued to the next year. The total loss to the service by diseases and injuries amounted to 188,738 days, which gives a daily average sick list of 517.09. The following table will show these facts, and also the number admitted each quarter of the year, and the average number of days under treatment:

	Remaining from last year.	Admitted.				
		First quarter.	Second quarter.	Third quarter.	Fourth quarter.	Total.
Force afloat	204	2,496	2,503	2,765	2,520	10,488
Naval hospitals	267	273	219	319	306	1,324
Naval stations	57	990	648	415	529	2,639
Total	468	3,759	3,370	3,499	3,355	14,451

	Discharged.				Continued.	Total number of sick days.	Average number of days under treatment.	Daily average number of sick.
	Recovered.	Invalided.	Died.	Total.				
Force afloat	9,249	974	36	10,259	229	80,344	8.51	244.76
Naval hospitals	788	262	53	1,103	221	77,043	58.18	211.07
Naval stations	2,422	179	7	2,608	31	22,351	8.47	61.23
Total	12,459	1,415	96	13,970	481	188,738	13.06	517.09

FORCE AFLOAT.

The force afloat during the year ending 1879 amounted to 10,388—corrected for time, 8,869; 204 cases remained over from the preceding year; 10,284 were admitted, of which 9,249 were discharged recovered, 974 invalided, 36 died, and 229 were continued to the succeeding year. The ratio of admissions was 1,182.54 per thousand of strength, which is considerably lower than in several foreign navies, the official report of the Austrian service for 1878 showing a ratio of 1,496.98, of the Prussian (1878–'79) 1,490.9, and of the English (1878) 1,177.28.

The number of sick days reached 89,344, giving a daily average sick rate of 244.76, or 27.59 per thousand. The squadrons stand as regards healthfulness in the following order: North Atlantic, Asiatic, South Atlantic, Pacific, European, and Special Service.

The following table will show the strength, relative sick rate, number invalided, and dead in the several squadrons:

Stations.	Strength.	Number of cases of disease and injury.	Number of cases per man.	Number of days sickness.	Average number of sick daily on board.	Ratio per M.	Invalided.		Died.	
							No.	Per M.	No.	Per M.
North Atlantic	4,128	4,175	1.00	30,146	82.59	20.00	610	147.70	11	2.66
South Atlantic	610	636	1.04	5,158	14.13	23.16	33	54.09	..	.....
Pacific	1,502	1,784	1.18	17,826	48.83	32.50	128	85.21	10	6.65
European	1,233	2,054	1.66	17,827	48.84	39.61	91	73.80	5	4.05
Asiatic	1,150	1,265	1.10	10,384	28.44	24.73	100	86.95	7	6.08
Special Service	246	574	2.33	8,003	21.92	89.10	12	48.78	3	12.19
Total	8,869	10,488	1.18	89,344	244.76	27.59	974	109.82	36	4.06

The number invalided was 974, a ratio of 109.82 per thousand. In respect to the relative frequency of invaliding, the squadrons may be arranged thus: North Atlantic, 147.7 per M; Asiatic, 86.95 per M; Pacific, 85.21 per M; European, 73.8 per M; South Atlantic, 54.09 per M; Special Service, 48.78 per M. The causes of invaliding were as follows:

Classes of disease and injury.	Cases.	Per M.
Zymotic diseases	81	9.13
Constitutional diseases	233	26.27
Diseases of the nervous system	87	9.80
Diseases of the eye	24	2.70
Diseases of the ear	5	0.56
Diseases of the teeth	2	0.22
Diseases of the circulatory system	26	2.93
Diseases of the absorbent system	24	2.70
Diseases of the respiratory system	166	18.71
Diseases of the digestive system	75	8.45
Diseases of the locomotive system	6	0.67
Diseases of the genito-urinary system	75	8.45
Diseases of the integumentary system	26	2.93
Poisons	4	0.45
Tumors	5	0.56
Violent diseases and injuries	135	15.20
Total	974	109.82

The number of deaths amounted to 36, or a ratio of 4.06 per M; the ...hest proportion was in the Special Service, 12.19 per M; next in the ...fic squadron, 6.65 per M; then in the Asiatic, 6.08 per M; Euro-

pean, 4.05 per M; North Atlantic, 2.66 per M, and none in the South Atlantic.

The causes of deaths were as follows:

Classes of disease and injury.	Cases.	Per M.
Zymotic diseases	12	13.53
Constitutional diseases	2	0.22
Diseases of the nervous system	2	0.22
Diseases of the circulatory system	3	0.33
Diseases of the respiratory system	4	0.45
Diseases of the digestive system	3	0.33
Diseases of the genito-urinary system	1	0.11
Diseases of the integumentary system	1	0.11
Violent diseases and injuries	8	0.90
Total	36	4.06

Regarding the relative frequency of the various classes of disease on the different stations, it may be remarked that zymotic affections, chiefly malarial, prevailed most extensively in the Pacific, and least in the Asiatic. Constitutional diseases, which include syphilitic affections, were most prevalent in the European squadron, and least so in the North Atlantic. Diseases of the nervous system were most numerous in the South Atlantic, and least in the Asiatic. The European squadron furnished the highest ratio of local affections, especially those of the respiratory, digestive, genito-urinary, and integumentary systems, and of violent diseases and deaths. The following table, showing the ratio per thousand of the different classes of disease, will display these facts in a striking manner:

Classes of disease and injury.	North Atlantic.	South Atlantic.	Pacific.	European.	Asiatic.	Special service.
Zymotic diseases	127.90	119.67	185.75	154.08	98.20	443.08
Constitutional diseases	104.65	144.26	185.76	221.41	151.30	97.56
Diseases of the nervous system	42.63	83.62	79.22	77.80	40.80	48.78
Diseases of the eye	12.35	24.59	13.98	21.81	23.47	16.26
Diseases of the ear	5.57	8.19	5.99	1.62	11.30	4.06
Diseases of the circulatory system	9.93	4.91	9.31	7.29	8.60	8.13
Diseases of the absorbent system	9.69	14.75	12.64	23.51	22.60	16.26
Diseases of the respiratory system	125.96	134.42	118.50	173.56	122.60	85.32
Diseases of the digestive system	197.48	131.14	162.44	343.97	210.40	150.40
Diseases of the genito-urinary system	53.53	50.81	59.92	146.80	97.30	36.58
Diseases of the locomotive system	4.59	16.39	4.66	9.73	7.84	.....
Diseases of the integumentary system	87.93	104.91	101.84	193.29	103.47	150.40
Poisons	20.59	19.67	30.62	39.73	18.20	4.06
Violent diseases and injuries	203.97	180.32	211.71	265.20	179.12	272.31

Of the various forms of disease to which sailors are liable, second in order of frequency are those of zymotic character. It will be seen from the following table (p. 11) that of the grand aggregate (10,488) of all diseases and injuries this class constituted 1,538, a ratio of 173.4 per M.

Epidemic catarrh occurred mainly on ships lying in the various ports of our coast, and was the expression of the epidemic influences there prevailing. From this cause there was but little loss to the service in time and no invaliding.

Although the vessels on the Asiatic station frequented ports of China and Japan where cholera was prevailing to a greater or less degree, but one case occurred, which recovered.

The two cases of dengue reported were on vessels visiting the Southern ports of the United States where the disease was endemic.

Diphtheria is very uncommon in the naval service, and but one case is reported which required invaliding of the patient.

Erysipelas was observed in 13 cases, mostly idiopathic in origin, and two of these were invalided.

Cerebro-spinal-meningitis occurred in two cases, one of which died after a brief course; the other recovered.

Common continued fever gave a ratio of 12.5 per M, of which 6 were invalided. This designation is made to cover those cases of febrile disturbances due to ordinary atmospheric vicissitudes, exposure to excessive degress of heat and cold, and over fatigue.

Typhoid fever, being eminently a disease of defective sanitary surroundings, is usually introduced on the vessel by the men returning from shore, where the germs were implanted. But eight cases were reported from vessels in commission, of which five were invalided and one died.

The two cases of yellow-fever occurred under peculiar circumstances on the Plymouth, the histories of which are related on a subsequent page.

Malarial fevers cause the greatest loss to the service of this entire group, furnishing a ratio of 136.79 per M, of which 5.29 per M were invalided and .78 per M died.

These diseases occur in every quarter of the globe visited by our ships, and always supply a large contingent to the sick list. The frequency of the diseases on the various stations will be found by reference to subsequent tables. Measles, mumps, and scarlatina occurred mostly on the training ships among the boys, the infection being brought from shore by those returning from leave.

There were 61 cases of vaccinia sufficiently severe to require medical treatment, being but a small fraction of those who were vaccinated, amounting for the whole service to 3,545. As will be seen by the annexed table, 5 per cent. of those presented evidence of having formerly suffered from small-pox, yet the reports show that 16.2 per cent. were found to be unprotected; 84.9 per cent. presented evidence of previous vaccination, and of these 23.2 per cent. were unprotected either from the former vaccination being imperfect or losing its influence by lapse of time. Only 9.7 per cent. exhibited no evidence of previous vaccination; in these cases the virus was effective in 35.4 per cent. It will be seen from this that of the whole number of persons vaccinated a quarter were liable to the contagion of small-pox, if we may judge from the results of the operation.

	Presenting evidence of small-pox.		Presenting evidence of previous vaccination.		No evidence of previous vaccination.		Total.
	Successful.	Unsuccessful.	Successful.	Unsuccessful.	Successful.	Unsuccessful.	
Total	31	160	698	2,312	123	221	3,545
Percentage of cases	5.4		84.9		9.7		
Percentage of successful	16.2		23.2		35.4		24.0

The care taken to protect sailors from small-pox by vaccination results undoubtedly in incalculable advantage, and it might be said has almost completely stamped this disease out of the Navy. The cases reported

were seven in number, or 1.01 per M, occurring in ships lying in infected ports.

Affections forming the second class, or constitutional diseases, stand fourth in order of frequency, affording a ratio of 143.42 per M, of which 26.27 per M were invalided and .22 per M died.

Adynamia and anæmia occurred in men who had been long in service, or were exposed continuously to malarial influences.

There was but one case of carcinoma reported, located in the inguinal glands, which resulted in death.

Diabetes is an equally rare disease; of the three cases that occurred one was invalided.

Gout furnished the small contingent of 1.24 per M, and was restricted exclusively to officers of somewhat mature age.

Rheumatic affections are very frequent among sailors, and is a prolific source of incapacity for duty. The three forms reported, acute, sub-acute, and chronic, occurred in 69.08 per M, of which 10.59 per M were invalided. These diseases are due to violent and sudden changes of temperature, or prolonged exposure, and neglect of proper precautions in clothing.

Next in frequency to rheumatic affections are the syphilitic, giving a ratio of 55.24 per M with an invalided ratio of 10.7 per M. These diseases are most rife on the Pacific Station, and others where the laws fail to protect the community by proper sanitary regulations of *those* who render themselves liable to venereal infections or become actually diseased; and least so on the Asiatic Station, where these regulations exist and which formerly was notoriously the worst station in this respect. A rigid system of inspection prevails on some ships, no man being permitted to go ashore infected. Venereal diseases of all sorts afford a ratio of 122.38 per M.

The diseases grouped among the various classes of local affections are nearly three times more numerous than the general diseases.

Those of the nervous system furnish a ratio of 56.61 per M, of which 9.8 per M were invalided and .22 per M died. The two which furnish the largest numbers of this group are cephalalgia and neuralgia; the former due partly to imperfect ventilation, so common in vessels, and partly to derangements of the chylo-poietic viscera; the latter chiefly to exposure to wet and cold.

Mental diseases furnish 4.38 per M, of which 3.13 per M were invalided. The majority of these cases developed after entering the service, and, as seen by the tabular figures, were nearly all invalided.

Epilepsy supplied 5.4 per M, which is a larger figure than formerly, from the greater number of boys now in the service. Affected persons occasionally succeed in passing the recruiting officer, by concealment of their past medical history. More than half of these cases were invalided.

Diseases of the eye amounted to 16.34 per M, of which 2.6 per M were invalided. The main forms of this class in the Navy are conjunctivitis and iritis; the former from exposure to cold, foreign bodies, etc., and the latter in part from syphilis.

Ear affections are not nearly as frequent as the former, contributing only 5.98 per M; the chief affections of this class are due to inflammation from exposure to cold.

From the great care in the physical examination of men for the service, diseases of the teeth are few, there were reported only 2.93 per M, of which 0.22 per M were invalided.

Diseases of the circulatory system are not numerous, supplying only 8.9 per M, of which 3.04 per M were invalided and .33 per M died.

The most frequent were palpitation and valvular disturbances, due to the influence of violent exertions in hauling on ropes, fire-room work, going aloft, etc., but principally to rheumatic inflammation.

Diseases of the absorbent system contribute 14.2 per M, of which 2.36 per M were invalided. These troubles consisted chiefly in enlargement of the lymphatic glands in various parts of the body, and eminently those of the groin and neck, attributed to inflammatory origin, from injuries, exposure to cold, etc.

Diseases of the respiratory system are among the most common encountered on shipboard, as might have been expected from the character of the physical surroundings of the sailor. This class yielded 130.22 per M, an invalided ratio of 18.94 per M, and .22 per M died. The higher numbers of this group are made up of catarrhal and bronchial affections; pneumonia and pleuritis each yield over 5 per M, while pulmonary phthisis gave 6.19 per M.

Diseases of the digestive system occupy the second place in point of frequency as might be conjectured from the peculiarities of the sailor's life; the constant change of climate, and variation of temperature, improper, or, as may happen, badly prepared food, the stay of ships in commercial ports where opportunities for dietetic errors are always present, are the chief determining influences. The group supplied 207.57 per M, of which 8.45 per M were invalided and .33 per M died. In the upper section of the digestive tract we find tonsillitis and pharyngitis common enough, the stomach and bowels are disturbed by inflammatory affections from climatic influences and dietetic abuses, causing gastritis, diarrhea, dysentery, and colics. The absence of variety in the food and lack of agreeable exercise, furnish their quota of dyspepsia, constipation, hemorrhoids, and fistula.

Diseases of the genito-urinary apparatus give a ratio of 72.5 per M, of which 8.45 per M were invalided and .11 per M died. By far the largest share of these cases fall under the head of venereal disease, and it would not be far from the truth to put the figure at 67.14 per M from this cause. The leading disease is gonorrhea, supplying about 33.14 per M, then follow orchitis, chancroid, and stricture.

Diseases of the locomotive system are principally made up of synovitis and periostitis, the results of exposure to cold and to bruises. The entire class furnished a ratio of 6.53 per M and .67 per M of invaliding.

Diseases of the integumentary system are very frequent in seafaring men. This class gives 107.22 per M, of which 2.93 per M were invalided and .11 per M died. Furunculus is notably prominent in frequency, next abscess, then ulcers, paronychia, and eczema.

Under the class "poisons" were returned 209 from alcohol, one from lead, and two from poisoned wounds, giving a ratio of 23.90 per M and .45 per M invalided. The major part of the alcoholic cases were of the nature of short debauches (ebriositas) by men on leave.

Tumors furnished a ratio of 2.13 per M and .56 per M invalided; the most common kind was sarcomatous.

Of all diseases affecting the sailor, those falling under the class "violent diseases and deaths" are most numerous, from the circumstance of his living in an instable tenement that involves the continual employment of mechanical contrivances for its propulsion and management. The class furnishes a ratio of 210.84 per M, 15.22 per M invalided and 0.9 per M dead. The most frequent injuries are contusions, sprains, and wounds. There were 19 cases of dislocation, 78 of fracture, one suicide, and six drowned.

Table showing the number of cases, the discharged, the invalided, and the dead for each disease, with their ratio per thousand of the total force afloat.

Diseases.	Number of cases.	Ratio, per M.	Number of sick days.	Average number of days under treatment.	Invalided.		Died.		Continued.
					Number.	Ratio, per M.	Number.	Ratio, per M.	
GENERAL DISEASES.									
1. *Zymotic.*									
Catarrhus epidemicus	34	3.83	107	3.1	.....	.....	.....	.....	.....
Cholera asiatica	1	0.11	9	9.0	.....	.....	.....	.....	.....
Denguis	2	0.22	3	1.5	.....	.....	.....	.....	.....
Diphtheria	1	0.11	1	1.0	1	0.11	.....	.....	1
Erysipelas	13	1.46	151	11.6	2	0.22	.....	.....	.....
Febricula	16	1.80	69	4.3	.....	.....	.....	.....	.....
Febris cerebro-spinalis	2	0.22	7	3.5	.....	.....	1	0.11	.....
Febris continua simplex	111	12.50	1,301	11.7	6	0.67	.....	.....	2
Febris enterica	8	0.90	104	13.0	5	0.56	1	0.11	.....
Febris flava	2	0.22	38	19.0	.....	.....	1	0.11	.....
Febris intermittens	929	104.77	6,147	6.6	32	3.60	3	0.33	8
Febris recidiva	6	0.67	15	2.5	.....	.....	.....	.....	.....
Febris remittens	284	32.02	4,282	15.0	15	1.69	4	0.45	2
Febris typhus	3	0.33	48	16.0	1	0.11	1	0.11	.....
Morbilli	20	2.25	109	5.4	11	1.24	.....	.....	.....
Parotitis	33	3.72	241	7.0	1	0.11	.....	.....	.....
Pyæmia	1	0.11	1	1.0	.....	.....	1	0.11	.....
Scarlatina	2	0.22	6	3.0	2	0.22	.....	.....	.....
Vaccinia	61	6.86	508	8.3	.....	.....	.....	.....	3
Variola	9	1.01	144	16.0	5	0.56	.....	.....	1
Aggregate	1,538	173.40	13,295	8.6	81	9.26	12	1.37	17
2. *Constitutional.*									
Adynamia	116	13.08	1,295	11.1	38	4.28	1	0.11	.....
Anæmia	10	1.12	194	19.4	1	0.11	.....	.....	.....
Carcinoma	1	0.11	30	30.0	.....	.....	1	0.11	.....
Diabetes	2	0.22	76	38.0	1	0.11	.....	.....	1
Diabetes insipidus	1	0.11	26	26.0	.....	.....	.....	.....	.....
Hydrops	4	0.45	58	14.5	1	0.11	.....	.....	1
Lumbago	16	1.80	180	11.3	1	0.11	.....	.....	.....
Podagra	11	1.24	82	7.4	1	0.11	.....	.....	.....
Rheumatismus acutus	311	35.04	3,472	11.1	32	3.60	.....	.....	12
Rheumatismus sub-acutus	10	1.12	107	10.7	4	0.45	.....	.....	4
Rheumatismus chronicus	292	32.92	2,921	10.0	58	6.54	.....	.....	.....
Senectus	5	0.56	16	3.2	1	0.11	.....	.....	.....
Syphilis primitiva	268	30.21	5,080	18.9	38	4.28	.....	.....	11
Syphilis consecutiva	222	25.03	3,533	15.9	57	6.42	.....	.....	9
Torticollis	3	0.33	6	2.0	.....	.....	.....	.....	.....
Aggregate	1,272	143.42	17,076	13.4	233	26.27	2	0.22	38
LOCAL DISEASES.									
3. *Diseases of the nervous system.*									
Apoplexia	3	0.33	28	9.53	2	0.22	1	0.11	.....
Cephalalgia	120	13.53	444	37.03	5	0.56	.....	.....	2
Cerebritis	1	0.11	18	18.00	.....	.....	.....	.....	.....
Chorea	1	0.11	5	5.00	.....	.....	.....	.....	.....
Convulsio	1	0.11	1	1.00	.....	.....	.....	.....	.....
Dementia	22	2.36	332	15.00	14	1.57	.....	.....	1
Epilepsia	48	5.41	607	12.60	21	2.36	.....	.....	.....
Insolatio	7	0.78	26	3.70	.....	.....	.....	.....	.....
Hysteria	2	0.22	5	2.50	.....	.....	.....	.....	.....
Irritatio spinalis	4	0.45	24	6.00	.....	.....	.....	.....	.....
Insomnia	1	0.11	13	13.00	.....	.....	.....	.....	.....
Mania	7	0.78	167	23.80	7	0.78	.....	.....	.....
Melancholia	11	1.24	199	18.90	7	0.78	.....	.....	1
Meningitis	1	0.11	3	3.00	1	0.11	.....	.....	.....
Nausea marina	28	3.15	92	3.60	1	0.11	.....	.....	1
Neuralgia	187	21.08	1,082	5.70	13	1.46	.....	.....	5
Paralysis	13	1.46	214	16.40	7	0.78	1	0.11	.....
Paralysis agitans	1	0.11	36	36.00	1	0.11	.....	.....	.....
Pleurodynia	26	2.93	206	7.00	3	0.33	.....	.....	.....
Sciatica	1	0.11	3	3.00	.....	.....	.....	.....	.....
Vertigo	16	1.00	103	6.40	5	0.56	.....	.....	.....
Aggregate	501	[illegible]	[illegible]	[illegible]	87	9.80	2	0.22	10

Table showing the number of cases, the discharged, &c.—Continued.

Diseases.	Number of cases.	Ratio, per M.	Number of sick days.	Average number of days under treatment.	Invalided.		Died.		Continued.
					Number.	Ratio, per M.	Number.	Ratio, per M.	
4. *Diseases of the eye.*									
Amaurosis	1	0.11	6	6.00	.....	.....	.....	.....	.....
Asthenopia	1	0.11	6	6.00	1	0.11	.....	.....	.....
Cataracta	1	0.11	8	8.00	1	0.11	.....	.....	.....
Conjunctivitis	86	9.69	761	8.80	7	0.78	.....	.....	2
Ecchymosis	1	0.11	9	9.00	.....	.....	.....	.....	.....
Ectropium	1	0.11	7	7.00	.....	.....	.....	.....	.....
Fistula lachrymalis	2	0.22	20	10.00	1	0.11	.....	.....	1
Hordeolum	7	0.78	13	1.80	.....	.....	.....	.....	.....
Hemeralopia	1	0.11	3	3.00	1	0.11	.....	.....	.....
Iritis	23	2.60	321	14.00	3	0.33	.....	.....	1
Keratitis	7	0.78	23	3.20	4	0.45	.....	.....	.....
Ophthalmia	7	0.78	51	7.20	1	0.11	.....	.....	.....
Ophthalmia tarsi	1	0.11	8	8.00	1	0.11	.....	.....	.....
Retinitis	3	0.33	18	6.00	3	0.33	.....	.....	.....
Retinæ congestio	2	0.22	22	11.00	.....	.....	.....	.....	1
Ulcus corneæ	1	0.11	44	44.00	.....	.....	.....	.....	1
Aggregate	145	16.34	1,320	9.10	23	2.6	.....	.....	6
5. *Diseases of the ear.*									
Otalgia	16	1.80	58	3.6	.....	.....	.....	.....	.....
Otitis	23	2.60	277	12.0	2	0.22	.....	.....	1
Otorrhœa	9	1.01	42	4.6	3	0.33	.....	.....	.....
Surditas	5	0.56	20	4.0	.....	.....	.....	.....	1
Aggregate	53	5.98	297	5.6	5	0.56	.....	.....	2
6. *Diseases of the teeth.*									
Odontalgia	25	2.82	61	2.4	1	0.11	.....	.....	2
Loss of teeth	1	0.11	4	4.0	1	0.11	.....	.....	.....
Aggregate	26	2.93	65	2.5	2	0.22	.....	.....	2
7. *Diseases of the circulatory system.*									
Angina pectoris	9	1.01	65	7.2	1	0.11	.....	.....	1
Endocarditis	1	0.11	26	26.0	1	0.11	.....	.....	.....
Hæmorrhagia	2	0.22	22	11.0	.....	.....	.....	.....	.....
Hypertrophia cordis	2	0.22	29	14.5	.....	.....	1	0.11	.....
Morbi valvularum cordis	14	1.57	137	9.0	8	0.90	1	0.11	.....
Palpitatio	36	4.05	219	6.0	15	1.69	.....	.....	.....
Pericarditis	5	0.56	34	6.8	.....	.....	1	0.11	1
Phlebitis	3	0.33	26	8.6	.....	.....	.....	.....	.....
Syncope	3	0.33	5	1.6	.....	.....	.....	.....	.....
Varix	4	0.45	19	4.7	2	0.22	.....	.....	.....
Aggregate	79	8.90	582	7.3	27	3.04	3	0.33	2
8. *Diseases of the absorbent system.*									
Adenitis	126	14.2	1,598	12.7	22	2.36	.....	.....	10
Aggregate	126	14.2	1,598	12.7	22	2.36	.....	.....	10
9. *Diseases of the respiratory system.*									
Aphonia	1	0.11	16	16.00	.....	.....	.....	.....	.....
Asthma	16	1.80	80	5.00	7	0.78	.....	.....	1
Bronchitis acuta	331	37.43	2,658	8.00	36	4.05	.....	.....	7
Bronchitis chronica	47	5.30	844	18.00	12	1.37	.....	.....	.....
Catarrhus	556	63.81	2,864	5.00	19	2.14	.....	.....	7
Emphysema	1	0.11	14	14.00	1	0.11	.....	.....	.....
Hæmoptysis	17	1.91	319	18.70	5	0.56	.....	.....	.....
Laryngitis	33	3.72	93	2.80	6	0.67	.....	.....	.....
Phthisis pneumonica acuta	7	0.78	96	13.70	7	0.78	.....	.....	.....
Phthisis pneumonica chronica	48	5.41	1,112	23.10	36	4.05	2	0.22	2
Pleuritis	46	5.19	537	11.60	13	1.46	.....	.....	2
Pneumonia	52	5.86	719	13.80	26	2.93	2	0.22	3
Aggregate	1,155	130.22	9,352	8.00	168	18.94	4	0.45	22

Table showing the number of cases, the discharged, &c.—Continued.

Diseases.	Number of cases.	Ratio, per M.	Number of sick-days.	Average number of days under treatment.	Invalided.		Died.		Continued.
					Number.	Ratio, per M.	Number.	Ratio, per M.	
10. *Diseases of the digestive system.*									
Ascites	1	0.11	43	43.00	.....	.....	.....	.....	.....
Cholera morbus	114	12.85	330	20.00	2	0.22	.....	.....	1
Cirrhosis hepatica	2	0.22	9	4.50	1	0.11	.....	.....	1
Colica	181	20.40	578	31.90	2	0.22	.....	.....	1
Congestio hepatis	5	0.56	27	5.40	2	0.22	.....	.....	.....
Constipatio	133	14.99	472	3.50	.....	.....	.....	.....	.....
Diarrhœa acuta	665	74.98	2,520	3.80	16	1.80	1	0.11	6
Diarrhœa chronica	17	1.91	303	11.90	8	0.90	.....	.....	.....
Dysenteria acuta	66	7.44	557	8.80	8	0.90	1	0.11	.....
Dysenteria chronica	5	0.56	192	38.40	4	0.45	.....	.....	.....
Dyspepsia	85	9.58	260	3.00	6	0.67	.....	.....	1
Enteritis	7	1.78	42	5.90	2	0.22	.....	.....	.....
Fistula in ano	11	0.24	126	11.40	3	0.33	.....	.....	.....
Gastritis	24	2.71	129	5.30	4	0.45	.....	.....	1
Gastrodynia	1	0.11	1	1.00	1	0.11	.....	.....	.....
Hæmatemesis	7	0.78	46	6.50	1	0.11	.....	.....	1
Hæmorrhois	68	7.67	386	5.60	4	0.45	.....	.....	1
Hepatitis acuta	6	0.67	130	21.60	.....	.....	1	0.11	.....
Hepatitis chronica	4	0.45	16	4.00	1	0.11	.....	.....	.....
Icterus	25	2.82	362	14.40	2	0.22	.....	.....	10
Peritonitis	1	0.11	30	30.00	.....	.....	.....	.....	.....
Pharyngitis	97	10.90	350	3.60	1	0.11	.....	.....	.....
Proctitis	1	0.11	3	3.00	1	0.11	.....	.....	.....
Splenitis	3	0.33	21	7.00	.....	.....	.....	.....	.....
Stomatitis	5	0.67	19	3.80	.....	.....	.....	.....	8
Tonsillitis	303	34.16	1,275	4.20	6	0.67	.....	.....	.....
Prolapsus ani	1	0.11	29	29.00	.....	.....	.....	.....	.....
Vermes	13	1.46	193	14.80	.....	.....	.....	.....	1
Aggregate	1,841	207.57	8,440	4.58	75	8.45	3	0.33	32
11. *Diseases of the genito-urinary system.*									
Albuminuria	4	0.45	87	21.70	3	0.33	1	0.11	1
Balanitis	8	0.90	187	23.30	1	0.11	.....	.....	4
Chancroid	61	6.98	1,384	22.60	2	0.22	.....	.....	.....
Congestio renalis	2	0.22	3	1.50	.....	.....	.....	.....	2
Cystitis	24	2.71	256	16.60	3	0.33	.....	.....	.....
Descensus calculi per ureteres	1	0.11	26	26.00	.....	.....	.....	.....	.....
Enuresis	7	0.78	11	1.50	5	0.56	.....	.....	.....
Epidydimitis	1	0.11	7	7.00	.....	.....	.....	.....	.....
Fistula vesicæ	1	0.11	81	81.00	.....	.....	.....	.....	6
Gonorrhœa	294	33.14	4,257	11.00	20	2.25	.....	.....	.....
Hæmaturia	2	0.22	14	7.00	1	0.11	.....	.....	.....
Hydrocele	5	0.56	65	13.00	.....	.....	.....	.....	.....
Ischuria	1	0.11	15	15.00	.....	.....	.....	.....	.....
Nephritis	4	0.45	117	28.10	1	0.11	.....	.....	4
Orchitis	148	16.79	1,793	12.10	14	1.57	.....	.....	1
Paraphymosis	8	0.90	107	13.30	.....	.....	.....	.....	2
Phymosis	10	1.12	128	12.80	1	0.11	.....	.....	.....
Prostatitis	3	0.33	14	4.60	1	0.11	.....	.....	.....
Spermatorrhœa	3	0.33	46	15.30	1	0.11	.....	.....	.....
Urethræ stricture	52	5.86	408	7.80	21	2.36	.....	.....	.....
Varicocele	3	0.33	23	7.60	1	0.11	.....	.....	.....
Inflammation of spermatic cord	1	0.11	3	3.00	.....	.....	.....	.....	.....
Aggregate	643	72.50	9,032	14.40	75	8.45	1	0.11	20
12. *Diseases of the locomotive system.*									
Arthritis	5	0.56	44	8.80	.....	.....	.....	.....	1
Ankylosis	2	0.22	40	20.00	1	0.11	.....	.....	.....
Bunion	1	0.11	8	8.00	.....	.....	.....	.....	.....
Bursitis	2	0.22	26	13.00	.....	.....	.....	.....	.....
Hydrops articulorum	4	0.45	51	12.75	.....	.....	.....	.....	.....
Necrosis	1	0.11	2	2.00	.....	.....	.....	.....	1
Ostitis	1	0.11	4	4.00	.....	.....	.....	.....	.....
Periostitis	14	1.57	217	13.35	1	0.11	.....	.....	.....
Synovitis	27	3.05	245	9.00	4	0.45	.....	.....	1
Aggregate	57	6.53	637	11.10	6	0.67	.....	.....	3

Table showing the number of cases, the discharged, &c.—Continued.

Diseases.	Number of cases.	Ratio, per M.	Number of sick-days.	Average number of days under treatment.	Invalided.		Died.		Continued.
					Number.	Ratio, per M.	Number.	Ratio, per M.	
13. *Diseases of the integumentary system.*									
Abscessus	261	20.42	2,567	9.83	5	0.56	1	0.11	1
Acne	6	0.67	120	20.00					
Alopecia	1	0.11	21	21.00					
Anthrax	13	1.46	95	7.30					
Cellulitis	1	0.11	2	2.00					
Ecthyma	4	0.45	17	4.25					
Eczema	30	3.38	511	17.00	3	0.33			3
Erythema	10	1.12	63	6.30					
Furunculus	380	42.84	2,089	5.49	3	0.33			6
Herpes	7	0.78	62	8.85	2	0.22			
Impetigo	1	0.11	5	5.00					
Lichen	4	0.45	15	3.75	1	0.11			
Onychia	6	0.67	126	21.00					
Paronychia	67	7.55	705	10.52	3	0.33			4
Pernio	11	1.24	79	11.18					
Pemphigus	2	0.22	16	8.00					
Porrigo	1	0.11	19	19.00					
Psoriasis	6	0.67	77	12.83					
Rhagades	3	0.33	17	5.60					
Rupia	1	0.11	33	33.00					
Scabies	3	0.33	47	15.60	1	0.11			
Tinea	7	0.78	99	14.10					
Ulcus	107	12.06	1,370	12.80	6	0.67			5
Unguis involutis	11	1.24	90	8.10					
Urticaria	7	0.78	16	2.20	1	0.11			
Verruca	1	0.11	17	17.00	1	0.11			
Aggregate	951	107.22	8,187	8.00	26	2.93	1	0.11	19
14. *Poisons.*									
Alcoholismus	28	3.16	62	2.21	2	0.22			4
Colica pictonum	1	0.11	8	8.00					
Ebriositas	178	20.00	558	3.13	2	0.22			1
Delirium alcoholismus	3	0.33	5	1.60					
Vulnus venenatum	2	0.22	19	9.50					
Aggregate	212	23.9	652	3.12	4	0.45			5
15. *Non-malignant tumors.*									
Condyloma	1	0.11	13	13.00	1	0.11			
Cystis	3	0.33	35	11.60	1	0.11			
Cystis sebacea	1	0.11	4	4.00					
Cystoma	1	0.11	10	10.00					
Fibroma	1	0.11	90	90.00					
Hygroma	1	0.11	10	10.00					
Lipoma	3	0.33	5	1.60					
Sarcoma	8	0.90	63	7.80	3	0.33			1
Aggregate	19	2.13	230	12.10	5	0.56			1
16. *Violent diseases and deaths.*									
Abrasio	78	7.89	614	7.87	2	0.22			2
Ambustio	83	9.37	736	8.86	4	0.45			
Concussio cerebri	5	0.56	12	2.50			1	0.11	2
Contusio	540	60.88	3,691	6.83	20	2.25			3
Fractura	68	7.66	1,298	19.10	29	3.26	1	0.11	1
Hernia	47	5.30	460	9.80	29	3.26			1
Luxatio	19	2.13	276	14.52	3	0.33			7
Stremma	380	42.84	2,637	6.93	29	3.26			
Submersio	6	0.67	6	6.00			4	0.45	
Suicide	1	0.11	1	1.00			1	0.11	2
Vulnus contusum	286	32.25	2,400	8.40	7	0.78	1	0.11	2
Vulnus incisum	168	18.94	1,274	7.58	3	0.33			2
Vulnus laceratum	107	12.06	1,118	1.44	2	0.22			4
Vulnus punctum	80	9.04	397	4.96	7	0.78			
Vulnus sclopeticum	2	0.33	45	22.50					
Aggregate	1,870	210.84	14,964	8.00	135	15.22	8	0.90	40
Grand aggregate	10,488	1182.54	80,344	8.51	974	109.82	36	4.05	229

RECRUITING.

The men enlisted in the Navy are required to come up to a certain standard of physical development, which is determined by a rigid inspection. In spite of all the care which has been taken it happens occasionally that persons, by concealment of facts that can only be known to themselves, regarding their hereditary peculiarities, past diseases, and other circumstances of their physical life, are passed into the service, and in a few weeks or months, under the peculiar surroundings and exposure of marine life, they dispiay the presence of those hereditary or acquired tendencies that had at first baffled objective examination, and become subjects for medical treatment. This class is not large, and its members are periodically eliminated after a greater or less delay in hospital.

Another cause of the shipment of recruits not physically qualified grows out of the hitherto objectionable practice of conducting the enlistments on ship-board, where no adequate preparations are made for such purposes, or in quarters not provided with the necessary means of making a thorough physical examination. It has been the object of the Bureau to avoid this source of error as far as possible, by furnishing the proper instruments of precision to all medical officers engaged in this important duty.

It is believed that the government will reap still further advantages ii, at the principal recruiting stations, a suitable room be set apart for this object and a medical officer specially detailed for the service. When the exigencies of the Navy require this duty to be done on ship-board, appropriate space, well-lighted and of ample dimensions, should be set apart for the purpose, and the examinations performed at such hours as will free them from the disturbing noise attending the ship's routine.

The examination of the cadets is no less rigorous than that for the sailors. It has been the endeavor to secure the highest physical development compatible with the ages required by law for entrance. The examinations have been made upon admission and at stated intervals during the years the cadets tarry at the school, and thus important facts bearing upon the laws of growth and development have been gradually accumulated. This subject has been made a matter of special study by Medical Director GIHON, from whose report, based upon the examination of 6,129 lads (candidates for admission, and pupils in the Naval Academy), the Bureau has been enabled to present the following important information. He says:

> Among the first considerations presented to me, when appointed to the inspection of recruits, was the want of a standard of physical measurement, particularly for candidates for admission into the naval service as apprentices and cadets.
>
> The Bureau had very promptly issued stringent regulations for medical examiners, requiring uniformity and exactness of method, had liberally provided the recruiting offices with improved apparatus, and had strenuously urged the location on shore of proper places for physical examinations at the several naval stations; but there were still lacking satisfactory guides as to the proper weight, height, etc., of boys seeking to enter the Navy, whether for duty before the mast or for education as officers. Five feet had been specified as the minimum stature for admission to the Naval Academy, but it was evident from the numbers rejected on this account at fourteen and fifteen years of age, who, subsequently admitted by waiver of the disability, in the course of a year outstripped others entering at seventeen or eighteen, just within the limit of height, that this was an unfair standard for candidates, where ages ranged from fourteen to twenty.
>
> Being then on duty as senior medical officer at the Naval Academy, it occurred to me that the material existing among the records of physical examination at that institution might be exceptionally valuable for determining proper standards of size,

weight, and development, on account of the number of candidates examined, the diversity of their social stations, occupations, nativity, and residence, and especially because of the careful inspections of the nude body, which had been always practiced.

I have accordingly carefully tabulated every physical measurement recorded at the Academy from the year 1852 to the present summer (1880). The sum total of examinations amounted to 6,129, which I have grouped according to the years and months of their respective ages, as shown by Table A.

The particular physical measurements tabulated are:

1. The *weight* of the body entirely nude;

2. The *height* of the erect body from the vertex to the soles;

3. The mean *circumference of thorax* at the level of the nipples, this mean being that between the maximum girth at the moment of utmost possible inflation and the minimum after prolonged expiration;

4. The difference, termed *expansion*, between this maximum and minimum girth;

5. The *vital capacity* of thorax, ascertained by Hutchinson's spirometer;

6. The *strength*, as indicated by the number of pounds lifted, shown on the dial of a spring dynamometer, the candidate standing behind the apparatus, with legs straight, and bending forward to seize the hand-bar, raised to be within easy reach of the extended arms. The number of pounds lifted might have been greater in many cases had the candidate been permitted to straddle the hand-bar, with knees bent, raising it perpendicularly; but as the object was to submit all candidates to precisely the same test for comparative results, and not merely to ascertain the greatest possible effort of muscular power, all were required to handle the instrument in the same manner. Fewer observations of strength and vital capacity than of the other measures have been recorded, the necessary apparatus having been only recently provided.

I had hoped in the examinations which have taken place during the last two years to have included an additional measurement, that of the *vertico-perineal height*, showing the length of the cerebro-spinal axis, and in the admirable steel measuring staff, supplied by the Bureau to our examining offices, provision exists for taking this dimension simultaneously with the height, by a perineal rod, intended to be applied accurately beneath the extremity of the coccyx, an independent scale giving the measure, without the operation of subtraction formerly necessary and always a source of error. Experience has satisfied me, however, that it is almost impossible to have this measure taken with that uniform preciseness which will render it of any value. I have found the same youth, examined in successive years, recorded sometimes by the same examiner as having a perineal height progressively diminishing, and with different examiners an inch of variation is not unusual. Some are careful to separate the nates and adjust the terminal button of the rod accurately beneath the coccyx; others merely press the rod against the perineum; some allow it to be arrested by the closed nates, while others, who carefully separate the buttocks, neglect to keep the body erect. The following instances illustrate these irregularities:

	Age.	Height.	
		Vertex to soles.	Vertex to perineum.
	Yrs. Mos.	*Inches.*	*Inches.*
A	16 2	60	34.75
	16 5	60	34.12
	17 2	60	34.75
	17 5	60	34.87
B	16 2	65	34
	16 5	65.12	33.25
	18	66	34.75
C	16 10	67.75	33.25
	17 1	68.75	32.75
	17 10	69.87	35
D	17	72	36
	21	73	36.25
	23	73	37.75

	Age.		Height.	
			Vertex to soles.	Vertex to perineum.
	Yrs.	*Mos.*	*Inches.*	*Inches.*
E	17	10	69.75	36
	18	10	70.50	35.50
	19	10	70.50	35.75
	20	10	70.50	36.50
F	17	10	69.25	34.25
	18	10	70.50	35.25
	19	10	71.25	34.50

After fruitless endeavors to educate all examiners to a uniform method of making this measurement, I am reluctantly compelled to advise its abandonment, although I had hoped it would have been demonstrable that the proportionate length of the cerebro-spinal column to that of the body might have been some evidence of the activity, energy, and vigor of the individual, and that the relative rate of growth of legs and body might also have been determined. Dr. GOULD stated, in his paper "On the stature of American soldiers," that the "tall men did not wear as well as the shorter"; and Medical Director RUSCHENBERGER, in his "Contributions to the statistics of human growth," says, "It seems probable that the length of the cerebro-spinal column may be a more valuable element in estimating the physical qualifications of a recruit than total stature. Observation has led me to conjecture that as a rule men of average height, made up of long trunk and comparatively short lower extremities, possess greater power to endure with impunity great labor and exposure to vicissitudes of all kinds than men who have comparatively long lower limbs and short trunk." His measurements of the height of the perineum of 217 adolescents are published in the American Journal of Medical Sciences for July, 1867, but as they were made by the wooden perineal bar then in use, it is probable that the results were vitiated by the varying thickness of the soft parts about the perineum. I have collated in Table B a number of examples of the length of the cerebro-spinal axis of boys of different heights at various years of age, exhibiting its proportion to the total height. There are indications (1) that the cerebro-spinal column attains its complete length before the later years of adolescence, and (2) that great stature is generally due to length of legs; but, for the reasons stated, dependence cannot be placed upon the correctness of all the figures. Nothing is so difficult to impress upon young medical examiners as the necessity for extreme accuracy. The mere fact of physical disqualification is often apparent to the recruiting officer without need of using any apparatus, but this is not the sole object of his work, which, to be available for the establishment of statistical facts with possible practical bearings, must be done thoroughly, else it will be valueless and represent only wasted time.

The uses of the spirometer and dynamometer scarcely require explanation, but different examiners reach different results with these apparatus, as they exercise greater or less care in instructing candidates how to make the trials, and in repeating them again and again until a satisfactory effort has been accomplished.

Similar considerations have induced me to substitute the mean circumference of thorax for the extremes after inspiration and expiration. The examiner who patiently instructs the candidate, especially a boy examined for the first time, how to inflate and empty his lungs and encourages him to prolonged efforts, will arrive at wider extremes than one who negligently observes a routine method. The means, however, will be more nearly alike in the two cases. A single measure, moreover, has the advantage for comparison, and the expansion really represents the mobility of the thorax better than extreme dimensions. But a stout finger or two holding the stethometer or tape and allowed to add their bulk to the measure is a source of error which should hardly require to be cautioned against, but is unfortunately not uncommon.

In Table C, I have represented the means of these six physical measurements of American youths from fourteen to twenty-three years of age for periods of twelve months deduced from 6,129 observations. This table, the only one in which I have had time to include the metric equivalents, I unhesitatingly submit as accurately exhibiting the means of these six physical data of lads between fourteen and twenty-one years of age, drawn from all but the very lowest classes of the people and from every section of the country. Above the latter age, a greater number of observations might somewhat modify the numbers here given. In my desire to arrive at exact results I

have personally scrutinized every item with the utmost care, have myself made every calculation involved in the preparation of the table, and where I have discovered evidence of manifest incorrectness in record or transcription have sought in every possible way to eliminate the error.

The observations for each year have fortunately been very equally distributed among the twelve months, as shown by Table A; consequently, making the annual means fairer representatives of the whole year. That the progressive scale of means in Table C is probably near the truth is further evident from Table D, in which these means are compared with those of lads at or near the completion of each year of age. Thus the average height of boys between fifteen and sixteen being 63.9 inches, that of boys who had completed their sixteenth year (those between 15″ and 16′) is 64.6 inches, being, as was to be expected, in excess of the former, and less than that of boys between sixteen and seventeen, which is 65.4. Both sets of scales exhibited in this table are in very satisfactory accordance throughout. Fractional differences of tenths of inches and of pounds in means ought not to have much value when it is remembered that the original measures seldom differed by less than eighths, and more commonly by fourths.

The trifling loss of weight indicated by the fractional fall from 135.7 at twenty-one years to 135.3 at twenty-two, and the diminished muscular power shown after the twenty-second year I do not think entirely due to the smaller number of observations and possible preponderance of inferior subjects, but I believe indicates a fact of some importance. Most of the observations after twenty-one were of young men who had quit the Academy, and, when afterwards examined for promotion, were, owing to the cessation of the restrictions and enforced regimen of the school during the interval, actually in worse condition than when they had left, and it is probable that the similar independence of parental restraint and the license of indulgence common at this age operate with like retrogressive effect upon young men in civil life. In my sanitary report of January 1, 1878, to the Bureau I called attention to this fact [see Hygienic and Medical Reports, 1879, p. 884] and showed that many cadets who had gained weight rapidly and regularly at the Academy were found to have lost from three to six pounds when examined sixteen to twenty months later. I propose to illustrate this more fully in a subsequent paper, exhibiting the continuous health histories and rate of growth of youths of various ages during periods of from seven to ten years.

While I was not prepared to place the same dependence upon the spirometer means, I was surprised to find on comparing them with Dr. Hutchinson's estimates of normal vital capacity at the mean heights the exact correspondence shown by the first and third columns under vital capacity in Table D. In the earlier years, at least, there also seems to be some relation between vital capacity and muscular vigor which Dr. Jackson attempted to establish, but which Dr. Carpenter thought improbable.

After the twenty-third year growth is exceedingly small, further increase in height during the next seven to ten years not exceeding half an inch, in weight five or six pounds, and in circumference of thorax scarcely an appreciable amount. While I attach less value to the means in Table C, after twenty-one, than to those at earlier ages, on account of the smaller number of observations, they will be seen to be quite in accord with the following, from the compilation on pp. 58–60 of Medical Purveyor J. H. Baxter's Report on Medical and Anthropological Statistics (1875).

Age.	Mean weight.	Mean height.	Pounds of weight to each inch of height.	Mean circumference of thorax.	Number of individuals examined.	Authority.
	Pounds.	*Inches.*				
23	136.90	67.60	2.02	34	147 cadets at United States Naval Academy.	
23 and over.	139	67.80	2.05	34.30	125 cadets at United States Naval Academy.	
23.94	147.50	67.35	2.19	34.99	1,700 soldiers	Elliott.
24.01	148.29	67.36	2.20	.....	1,537 recruits	Coolidge.
24.09	.....	67.90	.....	.....	833,260 soldiers	Gould.
25.62	144.83	67.34	2.15	34.43	8,349 soldiers (volunteers)	Gould.
26.39	136.05	67.30	2.02	34.11	6,359 accepted recruits	Baxter.
26.96	.....	67.35	.....	35.25	196,980 accepted recruits	Baxter.
.....	142.80	67.22	2.12	35.09	12,951 soldiers (volunteers)	Gould.
.....	.....	67.41	.....	34.77	29,930 recruits, accepted and rejected (New England).	Baxter.
.....	.....	67.67	.....	34	315,620 recruits, accepted and rejected	Baxter.
.....	.....	67.93	.....	34.50	77,665 recruits, accepted and rejected (Ohio and Indiana).	Baxter.

While the means in Table C exhibit a progressive gradation through adolescence towards maturity, it will not do to accept them as standards for the rejection of candidates who fall below them. Table E exhibits in detail, for every month of age, the minima and maxima of the six physical measurements which have been recorded. Want of space compels me to omit other tables showing the actual number of individuals at each month of age whose physical measurements exactly corresponded with the several means, but in Table F these numbers are shown for periods of twelve months. It will be observed that among one thousand lads, there will be—

Under mean weight 387	Under mean height 425	Under mean circ. thorax ... 418
At mean weight 243	At mean height 159	At mean circ. thorax 199
Over mean weight 370	Over mean height 416	Over mean circ. thorax 383

Only one-fourth or less actually approach the mean, while the numbers below and above are about the same, the former rather in excess of the latter.

Careful examination of the omitted tables, which also exhibited the number of individuals at each month of age whose weights differed by increments of ten pounds, and whose heights and chest measures differed by one inch, showed a marked regularity of divergence on either side of the means, and in Table F, I have condensed these facts under three heads, denoting the numbers below, between, and above certain evidently normal extremes of weight, height, and circumference of thorax for each year, the whole number of observations being summarized per thousand as follows:

	Weight.	Height.	Circumference of thorax.
Below normal minimum	41	51	38
Between normal extremes	906	899	925
Above normal maximum	53	50	37

At every age, therefore, there is a latitude of from fifty to sixty pounds in weight, seven to nine inches in height, and six to seven inches in circumference of thorax, within which over nine hundred of every thousand adolescents will be found, and it must be recognized as a fact that perfect health and bodily vigor and the development peculiar to the type and treatment of the individual are not inconsistent with an average departure below the mean of twenty-five pounds in weight, four inches in height, and three inches in circumference of chest.

These considerations enable me to recommend to the Bureau that no lad shall be accepted for the naval service, in any capacity, whose physical measurements are less than the following:

Age.	Weight.	Height.	Circumference thorax.	
Years.	*Pounds.*	*Inches.*	*Inches.*	
14 to 15	70	57	26	With not less than one inch expansion for all ages, and a vital capacity as given in Hutchinson's table.
15 to 16	80	59	27	
16 to 17	90	61	28	
17 to 18	100	62	29	
18 to 19	110	63	30	
19 to 20	110	63	30	
20 to 21	110	63	31	

Assuming these minima as warrants for rejection, if the 6,129 examinations recorded, there would have been excluded 237 as under weight, 251 as under height, and 152 as having defective chests, all these deficiencies usually co-existing in the same person, while the official records show that 262 individuals were actually rejected as physically disqualified, or, estimating per thousand, 41 would have been rejected as under weight, 51 as under height, and 31 as having chests too small. While, therefore, among every thousand youths, 910 will come between the limits compatible with healthy normal development, and 47 will exceed the maximum, there will be 43 who will fall below the minimum, and the records of the Examining Boards show that 42 per thousand have actually been rejected on account of defective developments, and 61 including those with functional and other forms of physical disqualification.

The time already occupied in the compilation of the tables presented in this paper compels me to defer the further discussion and comparison of my results with those of other observers; but I purpose during the ensuing year to offer to you a series of statistical notes on the subject of Adolescent Growth, illustrated by the annual examination of the same individuals during successive years.

TABLE A.—*Showing number of observations at each year and month of age.*

13 to 14.		14 to 15.		15 to 16.		16 to 17.		17 to 18.		18 to 19.		19 to 20.		20 to 21.		21 to 22.		22 to 23.		23 to 24.		24 to 25.		25 to 26.		26 to 27.	
Yr. mo.	Number.	Yr. mo.	Number.	Yr. mo.	Number.	Yr. mo.	Number.	Yr. mo.	Number.	Yr. mo.	Number.	Yr. mo.	Number.	Yr. mo.	Number.	Yr. mo.	Number.	Yr. mo.	Number.	Yr. mo.	Number.	Yr. mo.	Number.	Yr. mo.	Number.	Yr. mo.	Number.
13 1	2	14 1	10	15 1	26	16 1	69	17 1	91	18 1	75	19 1	73	20 1	54	21 1	31	22 1	17	23 1	6	24 1	3	25 1	1	.....	..
13 2	1	14 2	11	15 2	35	16 2	72	17 2	113	18 2	42	19 2	48	20 2	51	21 2	41	22 2	16	23 2	9	24 2	3	.....	..	.....	..
13 3	2	14 3	17	15 3	31	16 3	67	17 3	102	18 3	62	19 3	66	20 3	53	21 3	39	22 3	9	23 3	7	24 3	5	25 3	2	.....	..
.....	..	14 4	18	15 4	47	16 4	76	17 4	123	18 4	69	19 4	48	20 4	42	21 4	36	22 4	16	23 4	8	24 4	2	25 4	1	.....	..
.....	..	14 5	15	15 5	51	16 5	89	17 5	137	18 5	65	19 5	63	20 5	47	21 5	40	22 5	11	23 5	7	24 5	3	.....	..	.....	..
13 6	1	14 6	25	15 6	48	16 6	92	17 6	103	18 6	58	19 6	68	20 6	39	21 6	30	22 6	11	23 6	10	24 6	6	.....	..	.....	..
13 7	2	14 7	23	15 7	51	16 7	91	17 7	117	18 7	70	19 7	73	20 7	48	21 7	33	22 7	12	23 7	3	24 7	2	25 7	1	26 7	1
13 8	1	14 8	24	15 8	27	16 8	94	17 8	124	18 8	66	19 8	72	20 8	49	21 8	40	22 8	15	23 8	7	24 8	4	.....	..	.....	..
13 9	3	14 9	23	15 9	53	16 9	110	17 9	126	18 9	53	19 9	66	20 9	46	21 9	31	22 9	15	23 9	7	24 9	2	.....	..	.....	..
13 10	1	14 10	29	15 10	59	16 10	110	17 10	142	18 10	64	19 10	71	20 10	43	21 10	12	22 10	12	23 10	3	.....	..	.....	..	.....	..
.....	..	14 11	18	15 11	79	16 11	112	17 11	125	18 11	70	19 11	56	20 11	29	21 11	18	22 11	5	23 11	11	24 11	1	25 11	1	.....	..
14	16	15	58	16	89	17	139	18	124	19	60	20	43	21	37	22	21	23	8	24	2	25	2	.....	..	.....	..
Total....	29	.....	271	.....	596	.....	1, 123	.....	1, 437	.....	754	.....	737	.....	538	.....	372	.....	147	.....	83	.....	35	.....	6	.....	1

Aggregate, 6,129,

TABLE B.—*Showing probable relation of vertico-perineal*

Scale of height.	14 years.			15 years.			16 years.			17 years.			18 years.		
	Height.			Height.			Height.			Height.			Height.		
	Vertex to soles.	Vertex to perinæum.	Proportion of latter to former.	Vertex to soles.	Vertex to perinæum.	Proportion of latter to former.	Vertex to soles.	Vertex to perinæum.	Proportion of latter to former.	Vertex to soles.	Vertex to perinæum.	Proportion of latter to former.	Vertex to soles.	Vertex to perinæum.	Proportion of latter to former.
Inches.															
56	56.50	29.00	.513	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
57	.....	.....	.....	57.75	29.25	.506	.....	.....	.....	.....	.....	.....	.....	.....	.....
58	58.75	29.37	.500	58.75	30.75	.523	58.50	29.00	.496	.....	.....	.....	.....	.....	.....
59	.....	.....	.....	59.25	30.25	.510	.....	.....	.....	.....	.....	.....	.....	.....	.....
	.....	.....	.....	59.50	30.00	.504	59.50	31.25	.595	.....	.....	.....	.....	.....	.....
	59.75	30.37	.508	59.75	30.25	.506	.....	.....	.....	.....	.....	.....	.....	.....	.....
60	60.00	30.00	.500	60.00	31.00	.517	60.00	34.75	.579	60.00	34.75	.579	.....	.....	.....
	.....	.....	.....	60.25	31.50	.523	60.25	31.75	.527	.....	.....	.....	.....	.....	.....
										60.50	31.87	.519	.....	.....	.....
	60.75	31.50	.519	.....	.....	.....	60.62	31.87	.526	.....	.....	.....	.....	.....	.....
61	.....	.....	.....	61.00	32.00	.523	.....	.....	.....	61.00	30.75	.504	.....	.....	.....
	.....	.....	.....	61.50	31.00	.504	.....	.....	.....	61.50	32.50	.528	.....	.....	.....
	.....	.....	.....	.....	.....	.....	61.75	32.50	.526	.....	.....	.....	.....	.....	.....
	.....	.....	.....	61.87	31.37	.507	61.87	32.00	.517	.....	.....	.....	.....	.....	.....
62	62.00	32.25	.520	.....	.....	.....	62.00	31.75	.512	62.25	33.25	.534	62.12	30.00	.483
	62.12	32.00	.513	62.25	31.75	.510	62.25	32.75	.526	62.37	32.37	.519	62.37	31.87	.511
	.....	.....	.....	.....	.....	.....	62.50	32.50	.520	62.50	32.75	.524	62.50	32.25	.516
	.....	.....	.....	62.75	31.75	.510	.....	.....	.....	62.75	32.00	.510	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	62.87	32.75	.521
63	.....	.....	.....	63.00	31.75	.503	63.00	32.87	.522	63.00	34.00	.530	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	63.25	32.25	.514	63.25	32.50	.514
	.....	.....	.....	63.50	32.50	.512	63.50	32.25	.508	63.50	32.00	.504	63.50	33.87	.533
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	63.62	33.37	.524
64	.....	.....	.....	64.00	32.50	.508	64.00	32.25	.504	64.00	32.50	.508	64.00	33.00	.516
	.....	.....	.....	.....	.....	.....	64.12	32.62	.509	.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	64.50	33.50	.519	64.50	33.25	.515
	64.75	32.75	.506	.....	.....	.....	64.75	32.50	.502	64.62	34.00	.526	64.75	34.25	.528
65	65.00	33.00	.508	65.00	33.00	.508	65.00	34.00	.523	65.00	34.00	.523	65.00	34.25	.527
	.....	.....	.....	.....	.....	.....	65.25	33.00	.506	65.25	34.75	.533	65.25	32.50	.498
	.....	.....	.....	65.50	32.75	.500	65.50	33.50	.511	65.50	33.37	.509	.....	.....	.....
	65.75	34.75	.524	.....	.....	.....	.....	.....	.....	.....	.....	.....	65.75	34.00	.517
	65.62	33.00	.502	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
66	.....	.....	.....	66.00	35.50	.538	66.00	32.75	.496	66.00	34.00	.515	66.00	34.75	.527
	66.25	33.25	.502	.....	.....	.....	66.25	34.25	.517	.....	.....	.....	66.25	33.25	.502
	.....	.....	.....	.....	.....	.....	.....	.....	.....	66.50	33.50	.504	66.50	36.50	.549
	.....	.....	.....	.....	.....	.....	66.62	34.75	.522	.....	.....	.....	66.75	33.75	.506
	.....	.....	.....	.....	.....	.....	.....	.....	.....	66.75	33.50	.503	.....	.....	.....
67	.....	.....	.....	67.00	35.25	.526	.....	.....	.....	67.00	34.25	.511	67.00	33.12	.494
	.....	.....	.....	.....	.....	.....	67.25	34.50	.513	67.25	33.50	.498	67.25	34.75	.517
	.....	.....	.....	67.50	33.00	.489	.....	.....	.....	.....	.....	.....	67.50	34.00	.504
	.....	.....	.....	.....	.....	.....	.....	.....	.....	67.75	34.25	.505	67.75	34.75	.513
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
68	.....	.....	.....	.....	.....	.....	68.00	35.00	.515	68.00	33.75	.496	68.00	34.62	.509
	.....	.....	.....	68.25	35.25	.516	68.37	34.37	.503	.....	.....	.....	68.25	35.75	.524
	.....	.....	.....	68.50	34.00	.496	68.50	35.00	.511	68.50	36.25	.529	68.50	34.50	.504
	.....	.....	.....	.....	.....	.....	68.75	32.75	.484	68.75	32.75	.484	.....	.....	.....
69	.....	.....	.....	69.00	34.50	.500	.....	.....	.....	69.00	34.25	.496	69.00	34.75	.504
	.....	.....	.....	69.25	34.75	.502	.....	.....	.....	69.25	34.12	.493	69.25	36.25	.523
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	69.75	34.75	.498
70	.....	.....	.....	.....	.....	.....	70.00	36.00	.514	70.00	33.00	.471	70.00	33.50	.478
	.....	.....	.....	.....	.....	.....	.....	.....	.....	70.25	35.25	.502	70.25	35.25	.502
	.....	.....	.....	.....	.....	.....	70.50	35.50	.503	.....	.....	.....	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	70.75	37.25	.468
71	.....	.....	.....	.....	.....	.....	71.00	36.75	.517	71.00	35.50	.500	.....	.....	.....
	.....	.....	.....	.....	.....	.....	.....	.....	.....	71.25	34.50	.484	71.25	35.50	.496
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	71.37	33.50	.469
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	71.75	38.00	.529
72	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	72.00	36.00	.500
	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	72.50	36.50	.503
73	.....	.....	.....	.....	.....	.....	73.25	36.00	.491	.....	.....	.....	.....	.....	.....

to total height at different periods of adolescence.

19 years.			20 years.			21 years.			22 years.			23 years.			Mean height for each age.
Height.			Height.			Height.			Height.			Height.			
Vertex to soles.	Vertex to perineum.	Proportion of latter to former.	Vertex to soles.	Vertex to perineum.	Proportion of latter to former.	Vertex to soles.	Vertex to perineum.	Proportion of latter to former.	Vertex to soles.	Vertex to perineum.	Proportion of latter to former.	Vertex to soles.	Vertex to perineum.	Proportion of latter to former.	
															59.6
62.12	32.62	.525													
															62.3
			62.62	33.44	.534										
			62.75	32.25	.514										
63.00	32.00	.508													
63.25	32.50	.514													
63.62	33.37	.524				63.75	33.87	.531	63.62	32.00	.503				
64.00	35.00	.547	64.00	33.75	.527										
64.37	32.87	.511				64.37	32.25	.501	64.25	33.75	.525				
64.50	32.75	.508				64.50	32.25	.500	64.50	34.00	.527				
															64.6
64.75	34.25	.529	64.75	33.50	.517	64.75	33.50	.517				64.75	33.75	.522	
									64.87	34.12	.532				
65.00	35.00	.538	65.00	31.75	.489	65.00	33.37	.513				65.12	33.87	.520	
												65.25	34.50	528	
65.50	33.25	.538	65.50	34.25	.523	65.37	34.87	.533	65.50	34.62	.529	65.37	32.00	.489	
															65.6
65.75	34.50	.525				65.75	35.00	.532							
									65.87	33.87	.514				
						66.00	32.00	.485	66.00	34.00	.515	66.00	33.25	.504	
66.25	34.25	.517	66.25	35.00	.528	66.25	34.50	.521							
66.50	33.50	.504	66.50	32.75	.492	66.50	34.50	.519				66.50	31.75	.477	
			66.75	33.37	.500				66.75	35.00	.524	66.75	33.00	.494	
															66.8
66.87	35.37	.529													
67.00	34.25	.511	67.00	35.62	.532	67.12	35.25	.523	67.00	35.25	.522	67.00	35.37	.527	
67.25	33.37	.496	67.25	34.25	.509	67.25	35.25	.524							
															67.3
67.50	34.50	.511							67.37	35.25	.523				
															67.4
67.75	34.00	.502	67.62	35.12	.519	67.50	33.25	.492	67.50	35.00	.519	67.50	34.12	.505	
															67.5
			67.75	35.62	.526	67.87	35.37	.525	67.75	35.25	.520				
			68.00	34.87	.513							68.12	34.37	.501	
68.25	35.75	.524							68.25	35.00	.511				
68.50	33.50	.489	68.50	33.75	.493	68.50	36.62	.535	68.44	37.12	.542				
68.75	34.25	.498				68.75	34.50	.502	68.62	34.87	.508	68.75	35.37	.514	
69.00	36.75	.533	69.00	33.62	.487	69.00	34.50	.500	69.00	34.00	.493				
69.25	34.00	.497	69.25	33.62	.486	69.25	35.00	.525				69.37	34.87	.503	
69.50	36.75	.528	69.37	34.87	.503	69.50	35.50	.511	69.62	34.50	.495	69.50	34.25	.493	
69.75	35.75	.512				69.75	37.50	.537	69.75	34.25	.491	69.62	34.62	.497	
70.00	37.50	.536	70.12	34.50	.492	70.00	34.00	.486	70.12	34.50	.492	70.00	34.12	.487	
			70.25	33.75	.480				70.25	35.00	.498				
70.50	35.00	.496	70.50	35.25	.500	70.50	34.75	.493				70.37	34.75	.494	
						70.75	36.75	.519							
			71.25	34.50	.484										
									71.50	35.00	.489				
71.75	35.25	.491							71.75	36.50	.508				
72.00	37.00	.514	72.00	36.00	.500							72.37	37.12	.513	
72.50	34.50	.476										72.50	35.75	.493	
			72.75	36.00	.495										
73.25	35.00	.478				73.00	36.25	.496	73.00	36.25	.496	73.00	36.25	.496	

TABLE C.—*Showing means of physical measurements.*

Age.	Weight.			Height.			Circumference of thorax.			Expansion.			Vital capacity.			Strength.		
	Number of examinations.	Pounds.	Kilograms.	Number of examinations.	Inches.	Centimeters.	Number of examinations.	Inches.	Centimeters.	Number of examinations.	Inches.	Centimeters.	Number of examinations.	Cubic inches.	Centiliters.	Number of examinations.	Pounds.	Kilograms.
13 to 14 years	29	83.5	37.875	29	58.7	149.09	27	27.8	70.61	27	2.5		3	157	257.26	8	155	70.307
14 to 15 years	269	95.9	43.499	271	61.1	155.19	260	29	73.91	259	2.3	2.5	27	186	304.78	131	188	85.276
15 to 16 years	586	106.4	48.259	596	63.9	162.30	560	30.3	76.96	560	2.5		107	197	322.80	360	203	92.080
16 to 17 years	1,107	116.2	52.708	1,123	65.4	166.11	1,083	31.5	80	1,078	2.6	2.75	319	210	344.10	719	220	99.791
17 to 18 years	1,424	123	55.792	1,437	66.4	168.65	1,404	32.3	82.04	1,396	2.8		542	219	358.85	989	236	107.048
18 to 19 years	753	130.1	59.013	754	66.9	169.92	749	33.1	84.07	749	3.1		481	227	371.90	568	239	108.409
19 to 20 years	736	133.3	60.464	757	67.3	170.93	727	33.4	84.83	727	3.1	3	459	230	376.80	571	256	116.120
20 to 21 years	538	135.7	61.553	538	67.4	171.19	522	33.8	85.85	522	3.1		301	236	386.70	446	276	125.192
21 to 22 years	372	135.3	61.371	372	67.4	171.19	370	33.9	86.10	370	3		206	239	391.60	341	279	126.553
22 to 23 years	147	136.9	62.097	147	67.6	171.70	147	34	86.35	147	3.2	8.25	111	242	396.50	125	265	120.203
23 to 27 years	125	139	63.049	125	67.8	172.20	125	34.3	87.12	125	3.5	8.88	119	244	399.80	93	252	114.306
Total number of observations	6,086			6,129			5,976			5,960			2,675			4,351		

TABLE D.—*Showing means for annual periods and at completion of each year.*

Age.	Weight.		Height.		Circumference of thorax.		Expansion.			Vital capacity.			Strength.	
	Pounds.		Inches.		Inches.					Cubic inches.		Hutchinson's estimates.	Pounds.	
From 13 to 14 years	83.5		58.7		27.8		2.5			157		160	155	
At completion of 14th year		85.6		59.6		28.2		2.5			157			160
From 14 to 15 years	95.9		61.1		29		2.3		2.5	186		182	188	
At completion of 15th year		99.7		62.3		29.5		2.4			172			195
From 15 to 16 years	106.4		63.9		30.3		2.5			197		198	203	
At completion of 16th year		111.9		64.6		30.9		2.5			203			214
From 16 to 17 years	116.2		65.4		31.5		2.6			210		214	220	
At completion of 17th year		117.9		65.6		31.8		2.7	2.75		214			230
From 17 to 18 years	123		66.4		32.3		2.8			219		222	236	
At completion of 18th year		128.2		66.8		32.8		2.9			224			246
From 18 to 19 years	130.1		66.9		33.1		3.1			227		226	239	
At completion of 19th year		134		67.3		33.4		3.1			234			248
From 19 to 20 years	133.3		67.3		33.4		3.1			230		230	256	
At completion of 20th year		134.1		67.4		33.4		3	3		234			275
From 20 to 21 years	135.7		67.4		33.8		3.1			236		230	276	
At completion of 21st year		135.4		67.4		33.8		3			233			278
From 21 to 22 years	135.3		67.4		33.9		3			239		230	279	
At completion of 22d year		134.7		67.3		33.8		3.1			234			279
From 22 to 23 years	136.9		67.6		34		3.2		3.25	242		234	285	
At completion of 23d year		136.2		67.5		33.6		3.5	3.5		237			276
From 23 to 27 years	139		67.8		34.3		3.5			244		234	252	

TABLE E.—*Showing minima and maxima for every month, with number of individuals under and over allowable extremes.*

[For convenience and perspicuity, the months will be expressed in all these tables as fractions of the year.]

Age.	Weight.							Height.							Circumference of thorax.							Expansion.			Vital capacity.			Strength.		
	Number.				Minimum.	Maximum.	Difference.	Number.				Minimum.	Maximum.	Difference.	Number.				Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.
	Examined.	Under 70 lbs.	70 to 120 lbs.	Over 120 lbs.				Examined.	Under 57 in.	57 to 62 in.	Over 62 in.				Examined.	Under 26 in.	26 to 32 in.	Over 32 in.												
13 to 14	29	3	26	....	83½	119	36½	29	2	27	...	58¾	67½	8¾	29	2	27	....	25⅞	30⅝	4¾	5	1	4	180	140	40	180	50	130
14[1]	10	...	10	....	73	106	33	10	1	9	...	56¾	65¼	8½	9	....	9	..	26½	31¼	4¾	1½	4	2½	.....	.....	.....	225	250	25
14[2]	11	2	9	..	61	110¾	59¾	11	3	7	1	51¼	67½	16¼	11	2	8	1	24¼	32¼	8	1	3¼	2¼	.....	.....	.....	150	225	75
14[3]	17	1	14	2	63	123	60	17	2	15	...	56½	65¾	9¼	16	1	14	1	24¼	32½	8¼	3-4	3	2¼	.....	.....	.....	70	275	105
14[4]	18	....	18	....	72	117	45	18	2	15	1	56½	66	9½	18	1	16	1	25¼	32¼	7	1	3½	2½	120	222	102	110	230	120
14[5]	15	....	15	....	73	107¼	34¼	15	1	14	...	55½	62¾	7¼	15	....	15	....	27	31½	4½	1	4	3	.....	.....	.....	150	280	130
14[6]	25	1	22	2	70½	125	54½	25	3	20	2	56	67½	11½	23	1	21	1	24	32	8	1⅜	3⅜	2⅛	140	230	90	60	275	215
14[7]	22	2	19	1	65½	127	61½	23	2	19	2	53½	67	13½	21	2	18	1	25½	32½	7¼	⅜	3¼	2⅞	200	210	10	120	300	180
14[8]	23	....	22	1	79¼	123	43¾	24	1	22	1	56½	65¾	9¼	24	1	21	2	25⅝	32½	7⅛	1¼	4¼	3	160	190	30	60	260	200
14[9]	23	1	21	1	70	133	63	23	2	20	1	55½	65½	10	22	1	20	1	26	32⅝	6⅝	1¼	3½	2¼	170	230	60	130	250	120
14[10]	29	....	26	3	74	144	70	29	3	23	3	56	68½	12½	29	1	26	2	27⅛	35⅝	6½	1	4¼	3¼	190	240	50	125	250	125
14[11]	18	....	17	1	76¾	124	47¼	18	....	18	...	57¼	66	8¾	18	1	16	1	25	33½	8½	1½	5½	3¾	160	210	50	100	325	225
15	58	1	51	6	71	128	51	58	4	49	5	53¼	68¾	15½	54	2	51	1	25½	33⅛	7⅝	1	4	3	134	210	76	125	300	175
14 to 15	269	8	244	17	61	144	83	271	24	231	16	51¼	68¾	17½	260	13	235	12	24	33⅞	9⅞	¾	5½	4¾	120	240	120	60	325	265

TABLE E.—*Showing minima and maxima for every month, with number of individuals under and over allowable extremes*—Continued.

Age.	Weight.							Height.							Circumference of thorax.							Expansion.			Vital capacity.			Strength.		
	Number.				Minimum.	Maximum.	Difference.	Number.				Minimum.	Maximum.	Difference.	Number.				Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.
	Examined.	Under 80 lbs.	80 to 140 lbs.	Over 140 lbs.				Examined.	Under 59 in.	59 to 68 in.	Over 68 in.				Examined.	Under 27 in.	27 to 34 in.	Over 34 in.												
15[1]	26	3	23	....	78	131	53	26	4	19	3	56¾	69¼	12½	26	2	24	....	27¼	33½	6¼	1	3½	2½	**110**	210	100	100	250	150
15[2]	33	2	31	..	78¼	139	60¾	35	2	32	1	57⅛	69⅜	12	33	4	28	1	26½	35	8½	1	4½	3½	150	190	40	140	320	180
15[3]	30	3	27	....	74½	120	45½	31	2	28	1	57⅛	68⅛	11	51	....	31	..	27⅛	33¼	5⅜	**7.8**	4	3½	100	248	88	90	310	220
15[4]	47	1	46	....	69⅜	137	67⅝	47	8	36	3	54½	69½	15¼	47	2	44	1	26⅜	34⅜	8⅛	1½	4½	3	148	**250**	102	70	310	230
15[5]	51	4	46	1	**61**⅛	**153**	91⅞	51	6	44	1	56	69	13	51	2	47	2	26⅜	34½	8⅛	1	4	3	140	240	100	70	370	300
15[6]	47	5	42	....	62⅜	130	67⅞	48	5	39	4	**54**	69½	15½	46	2	44	....	26	33½	7½	1¼	4	2¾	172	250	78	135	250	115
15[7]	50	4	45	1	68⅛	152	83¾	51	4	45	2	56½	69½	13	49	6	41	2	24	**35**⅛	11¼	1	4	3	138	240	102	**60**	275	215
15[8]	26	2	24	....	73	132	59	27	4	20	3	54⅝	69⅜	15¾	26	2	24	....	**22**⅜	34	11⅝	1⅜	3½	2¼	194	240	46	135	290	155
15[9]	33	1	50	2	80	150	70	53	2	48	3	58	68⅝	10⅝	51	....	49	2	27½	34½	7⅛	1	4½	3½	140	220	80	130	325	195
15[10]	58	3	55	....	70	133	63	59	4	52	3	56	70½	14½	58	2	55	1	25⅜	34⅜	9⅛	1⅜	4	2⅝	170	230	60	135	**385**	250
15[11]	77	1	73	3	72	150	78	79	1	74	4	56½	**73**¼	17	79	2	71	6	26⅜	34⅜	8	1	4	3	150	240	96	110	330	220
16	88	....	86	2	81	153	72	89	4	79	6	55	71	16	63	....	61	2	27¼	34½	7⅛	1½	4	2½	160	230	70	60	325	265
15 to 16	586	29	548	9	61¾	153	91¼	596	46	516	34	54	73¼	19¼	560	24	519	17	22¾	35½	12⅛	⅞	4½	3⅝	110	250	140	60	385	325

TABLE E.—*Showing minima and maxima for every month, with number of individuals under and over allowable extremes*—Continued.

Age.	Weight.							Height.							Circumference of thorax.							Expansion.			Vital capacity.			Strength.		
	Number.				Minimum.	Maximum.	Difference.	Number.				Minimum.	Maximum.	Difference.	Number.				Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.
	Examined.	Under 90 lbs.	90 to 150 lbs.	Over 150 lbs.				Examined.	Under 61 in.	61 to 70 in.	Over 70 in.				Examined.	Under 28 in.	28 to 35 in.	Over 35 in.												
16[1]	66	4	62	....	71¼	145	73¾	69	5	64	....	57½	70	12½	68	7	61	....	27¼	34¾	7½	1	4½	3½	170	230	60	100	325	225
16[2]	72	5	66	1	73	151	78	72	10	59	3	56	71	15	72	5	65	2	26½	36	9½	1	4½	3½	140	240	100	50	300	250
16[3]	66	4	62	....	77	145	68	67	6	59	2	58½	71	12½	64	4	60	....	26½	34	7½	1	4½	3½	170	276	106	150	325	175
16[4]	73	5	68	....	79½	148	68½	76	8	64	4	58¾	72	13¼	74	2	70	2	26½	35½	8½	1	4	3	130	258	128	70	320	250
16[5]	89	2	87	....	81½	153	71½	89	4	80	5	60	71½	11½	86	3	82	1	26½	35½	9	1¼	4½	3¼	160	258	98	125	365	240
16[6]	92	6	84	2	80	160	86	92	5	86	1	56½	70¾	14¼	90	6	83	1	26½	35½	9	1	4½	3½	138	265	127	60	400	340
16[7]	92	5	84	3	76	152½	76½	93	6	80	7	53¾	73	19¼	93	5	82	6	26	36½	10½	1¼	5	3¾	150	250	100	100	350	250
16[8]	94	2	91	1	87	168	81	94	3	89	2	58½	71½	13	93	2	87	4	27¾	37	9¼	1	4½	3½	134	264	130	100	340	240
16[9]	108	2	102	4	87	164	77	110	5	101	4	58	74⅝	16⅝	105	5	93	7	26½	37¼	11	1½	4½	3½	132	296	164	90	400	310
16[10]	107	4	103	....	84	148	64	110	5	103	2	60¼	70⅝	10⅜	108	4	102	2	26½	35⅝	8⅞	1½	4½	3	150	270	120	90	325	235
16[11]	111	1	107	3	80	150	74	112	2	105	5	59½	71¼	11¾	111	2	108	1	27	35⅝	8⅝	1	4½	3½	163	270	107	60	350	290
17	137	....	133	4	92	220	128	139	7	125	7	57½	72	14½	119	....	118	1	28¼	36½	8	1	4½	3½	160	260	100	150	400	250
16 to 17	1,107	40	1,049	18	71¼	220	148¾	1,123	66	1,015	42	53¾	74⅞	21⅛	1,083	45	1,011	27	26	37⅞	11⅛	1	5	4	130	296	166	50	400	350

TABLE E.—*Showing minima and maxima for every month, with number of individuals under and over allowable extremes*—Continued.

Age.	Weight.							Height.							Circumference of thorax.							Expansion.			Vital capacity.			Strength.		
	Number.				Minimum.	Maximum.	Difference.	Number.				Minimum.	Maximum.	Difference.	Number.				Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.
	Examined.	Under 100 lbs.	100 to 150 lbs.	Over 150 lbs.				Examined.	Under 62 in.	62 to 71 in.	Over 71 in.				Examined.	Under 29 in.	29 to 36 in.	Over 36 in.												
17^{1}	92	8	82	2	89	159	70	91	6	85	....	60	70½	10½	89	3	86	....	27½	35½	8	1	5½	4½	165	250	85	100	360	260
17^{2}	122	12	105	5	85½	156	70½	123	6	117	....	59½	71	11½	123	6	117	....	27½	36	8½	1	5	4	165	272	107	115	350	135
17^{3}	99	6	91	2	83	165	82	102	3	95	4	61½	72	10½	101	7	92	2	28	36½	8½	1½	5	3½	160	272	112	90	375	285
17^{4}	121	8	108	5	81	166½	85½	123	10	111	2	60½	73½	12½	123	5	117	1	28½	37	8½	1½	6	4½	154	268	114	125	375	250
17^{5}	136	12	120	4	80½	160	79½	137	5	132	....	60	71	11	131	4	125	2	28½	36½	7⅞	1½	4½	3½	180	268	88	120	400	280
17^{6}	99	5	88	6	96½	169½	72⅞	103	5	96	2	60	73⅜	13⅜	98	3	90	5	28	38	10	1½	4½	3⅛	120	283	163	70	390	320
17^{7}	116	9	98	9	88	164	76	117	7	106	4	60½	72½	12⅛	116	2	109	5	28½	37	8⅜	1	7½	6½	150	332	182	140	375	235
17^{8}	123	5	114	4	94	166	72	124	4	119	1	60½	73½	12⅞	122	3	116	2	28⅝	37½	9	1½	4½	3⅛	138	270	132	130	400	270
17^{9}	126	5	113	8	89	160	71	126	4	118	4	60	72	12	124	2	116	6	28¾	36⅝	7⅞	1¼	5	3¾	130	290	160	120	400	280
17^{10}	141	2	134	5	88½	157	68½	142	2	138	2	60½	72	11½	138	2	135	1	28⅝	36½	7⅞	1	5	4	180	270	90	120	375	255
17^{11}	125	3	116	6	98½	175½	77	125	3	118	4	61¼	73½	12¼	121	2	114	5	28½	37½	9	1	4½	3½	142	282	140	115	400	285
18	124	2	107	15	100	185	85	124	2	118	4	62	72⅝	10½	118	3	110	5	27⅞	38½	11½	1	5	4	158	300	142	150	375	220
17 to 18	1,424	77	1,276	71	80½	185	104½	1,437	57	1,353	27	59½	73⅜	14½	1,404	42	1,327	35	27⅜	38½	11½	1	7½	6½	120	332	212	70	400	330

TABLE E.—*Showing minima and maxima for every month, with number of individuals under and over allowable extremes*—Continued.

Age.	Weight.							Height.							Circumference of thorax.							Expansion.			Vital capacity.			Strength.		
	Number.				Minimum.	Maximum.	Difference.	Number.				Minimum.	Maximum.	Difference.	Number.				Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.
	Examined.	Under 110 lbs.	110 to 160 lbs.	Over 160 lbs.				Examined.	Under 63 in.	63 to 71 in.	Over 71 in.				Examined.	Under 30 in.	30 to 36 in.	Over 36 in.												
18[1]	75	8	63	4	104	177	73	75	3	70	2	62	72½	10½	74	3	69	2	29¾	36⅜	6⅞	2	4½	2½	160	280	120	100	375	275
18[2]	42	6	34	2	101½	180	78½	42	2	39	1	62½	72	9½	42	1	40	1	30	38½	8½	1½	5	3½	120	284	164	150	375	225
18[3]	61	6	55	....	95½	158	62½	62	2	59	1	62¾	72	9¼	62	2	59	1	29¾	36¼	6½	1⅜	4⅜	3⅛	154	298	144	120	375	250
18[4]	69	7	61	1	104½	168	63½	69	6	61	2	60	71½	11½	69	1	65	3	30	37½	7½	1½	5½	4½	162	300	138	130	350	220
18[5]	65	6	59	....	102	159	57	65	3	60	2	62⅜	71½	8⅛	65	1	63	1	29½	36⅜	7⅜	1	5	4	170	320	150	100	355	255
18[6]	58	5	50	3	98	168	70	58	4	52	2	60½	71⅜	11⅛	58	1	54	3	29⅞	36¼	6⅜	1⅜	4½	2⅛	150	298	148	150	385	235
18[7]	70	5	63	2	100	175½	75½	70	2	67	1	62½	71½	9	70	5	63	2	27	37½	10½	1	5⅛	4⅛	180	310	130	150	375	225
18[8]	66	5	59	2	102	187	85	66	5	58	3	62½	71⅜	9⅛	66	....	60	6	30½	38⅝	8⅛	1½	5	3½	184	302	118	140	350	210
18[9]	53	3	49	1	106	161	55	53	2	51	....	62½	71	8½	52	2	46	4	29½	37⅛	7⅝	2	5	3	178	292	114	150	325	175
18[10]	64	2	59	3	104	174	70	64	1	61	2	62½	71½	9	64	....	62	2	30⅛	38⅛	8	1	5	4	160	330	170	130	325	195
18[11]	70	2	65	3	98	174	76	70	3	65	2	60½	72⅝	12⅛	67	2	62	3	30½	38⅝	8⅛	1½	5	3½	172	316	146	150	375	225
19	60	3	55	2	101½	164	62½	60	1	56	3	61½	73¼	11¾	60	....	56	4	28¾	36⅞	8⅛	1	6	5	190	320	130	150	350	200
18 to 19	753	58	672	23	95½	187	91½	754	34	699	21	60	73¼	13¼	749	18	699	32	27	38¾	11¾	1	6	5	120	330	210	100	385	285

TABLE E.—*Showing minima and maxima for every month, with number of individuals under and over allowable extremes*—Continued.

Age.	Weight.							Height.							Circumference of thorax.							Expansion.			Vital capacity.			Strength.		
	Number.				Minimum.	Maximum.	Difference.	Number.				Minimum.	Maximum.	Difference.	Number.				Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.
	Examined.	Under 110 lbs.	110 to 160 lbs.	Over 160 lbs.				Examined.	Under 63 in.	63 to 71 in.	Over 71 in.				Examined.	Under 30 in.	30 to 37 in.	Over 37 in.												
19[1]	73	1	69	3	109	180¼	71¼	73	1	65	7	63	72⅝	9⅝	73	....	72	1	31	37½	6½	1·2	5	4⅛	175	318	143	120	385	265
19[2]	48	5	35	8	104	183	79	48	4	41	3	62	72	10	48	....	42	6	30⅛	39⅜	9¼	1½	4½	3	165	328	163	150	400	250
19[3]	66	2	64	....	107	160	53	66	1	63	2	63	72½	9½	65	1	63	1	29½	37½	8	1⅛	5	3⅞	170	306	136	105	400	295
19[4]	48	1	45	2	104⅛	170	65⅛	48	2	45	1	62	71½	9½	48	....	46	2	30½	37⅜	7	1⅛	4⅛	3	180	295	115	120	410	290
19[5]	63	1	57	5	105	170	65	63	1	58	4	63	73	10	63	....	62	1	30⅛	38	7⅞	1½	5½	3⅞	182	308	126	150	420	270
19[6]	68	10	55	3	91⅛	170	78⅞	68	3	61	4	59	72½	13½	67	1	65	1	29⅝	39	9⅜	1	5	4	160	300	140	140	400	260
19[7]	73	2	68	3	104⅜	182	77⅝	73	2	67	4	62¾	73½	10¾	71	1	69	1	29½	40	10½	1	4½	3½	180	300	120	160	400	240
19[8]	62	3	57	2	105½	164	58½	62	2	59	1	61	72⅝	11⅝	61	....	60	1	30⅜	37½	6⅛	1½	5	3½	170	300	130	150	400	250
19[9]	65	2	58	5	107	179	72	66	2	63	1	61⅛	74	12⅞	65	1	63	1	30	38	8	1½	4½	3	168	300	132	150	400	250
19[10]	71	1	66	4	109	171	62	71	1	69	1	62⅝	71½	8⅞	69	1	67	1	29⅞	37⅛	7⅛	1	5	4	166	305	139	150	400	250
19[11]	56	3	52	1	99½	175	75½	56	3	51	2	62⅜	71⅞	9⅝	56	4	51	1	29½	37⅝	8⅛	1½	5½	4	160	290	130	150	400	250
20	43	4	38	1	103	168	65	43	2	36	5	62¾	72⅛	9⅜	41	1	40	....	30	36¾	6¾	1½	5	3½	170	290	120	120	400	280
19 to 20	736	35	664	37	91⅛	183	91⅞	737	24	678	35	59	74	15	727	10	700	17	29¼	40	10⅞	⅛	5⅛	5	160	328	168	105	420	315

TABLE E.—*Showing minima and maxima for every month, with number of individuals under and over allowable extremes—Continued.*

Age.	Weight.					Height.					Circumference of thorax.					Expansion.			Vital capacity.			Strength.		
	Number.					Number.					Number.													
	Examined.	Under 110 lbs.	110 to 160 lbs.	Over 160 lbs.	Minimum.	Examined.	Under 63 in.	63 to 71 in.	Over 71 in.	Minimum.	Maximum.	Difference.	Examined.	Under 31 in.	31 to 37 in.	Over 37 in.	Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.
20¹	54	....	45	9	111	54	....	47	7	63½	73½	10	54	2	48	4	30	37⅞	7⅞	2	6	4	184	320	136	150	400	250
20²	51	1	49	1	105	51	4	44	3	62⅝	71⅝	8⅝	51	....	50	1	31½	37⅝	6⅛	1½	5⅜	3⅞	170	324	154	175	400	225
20³	53	1	51	1	100	53	2	50	1	62½	71½	9	53	1	51	1	30	36⅞	6⅞	1½	5	3½	166	290	104	170	400	230
20⁴	42	1	33	8	108½	42	1	37	4	62	73	11	41	1	34	6	30⅜	38⅛	7⅞	1	5	4	200	320	120	170	400	230
20⁵	47	....	41	6	113½	47	....	43	4	63	72	8½	46	1	42	3	31¼	39¼	8	1	5½	4½	180	310	130	150	400	250
20⁶	39	1	37	1	100	39	....	41	....	64½	70½	6	37	2	34	1	30	39½	9½	1½	5	3½	180	310	130	165	400	235
20⁷	48	1	42	5	100	48	3	41	4	62½	71½	9	46	5	38	3	30	38	8	1½	5½	4	175	324	149	150	410	260
20⁸	41	1	40	2	100	49	1	47	1	63	72	9	46	2	43	1	31	37⅞	6⅞	1½	5	3½	175	281	106	180	400	229
20⁹	46	3	41	2	105	46	1	40	3	62½	71½	9	44	3	40	1	30½	40⅛	10	1	6	5	100	282	92	170	400	230
20¹⁰	43	2	39	2	87	43	3	39	1	61	71½	10½	42	2	39	1	30½	38½	8	1½	5½	4	150	305	155	150	400	250
20¹¹	29	3	25	1	94	29	1	28	....	61	70½	9½	26	3	22	1	30	37¾	7¾	2	4½	2½	196	250	154	150	400	250
21	37	1	29	7	107	37	2	34	1	61¼	73	11¾	37	3	31	3	29½	37⅝	7⅛	1½	5½	4	180	308	128	180	400	220
20 to 21	538	15	478	45	87	538	20	439	29	61	73½	12½	522	26	472	24	29½	40½	10½	½	6	5½	150	324	174	150	410	210

TABLE E.—*Showing minima and maxima for every month, with number of individuals under and over allowable extremes*—Continued.

Age.	Weight.							Height.							Circumference of thorax.							Expansion.			Vital capacity.			Strength.		
	Number.				Minimum.	Maximum.	Difference.	Number.				Minimum.	Maximum.	Difference.	Number.				Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.
	Examined.	Under 110 lbs.	110 to 160 lbs.	Over 160 lbs.				Examined.	Under 64 in.	64 to 71 in.	Over 71 in.				Examined.	Under 31 in.	31 to 37 in.	Over 37 in.												
21[1]	31	2	27	2	108	165	57	31	1	28	2	63⅜	73⅜	10	30	3	27	...	**30**	36½	6½	**1**	4½	3½	190	270	80	200	400	200
21[2]	41	1	38	2	104½	165	60½	41	3	37	1	64½	71	6½	41	2	37	2	31½	37	5½	1	5	4	170	**340**	170	150	400	250
21[3]	39	...	38	1	110½	168	57½	39	6	32	1	63	71¼	8¼	39	1	37	1	31	37½	6½	1½	4½	3	220	280	60	170	375	205
21[4]	36	...	35	1	116	168	52	36	1	33	2	63½	72	8½	36	2	34	..	30½	37	6½	1½	4½	3½	152	286	134	**130**	400	270
21[5]	40	...	37	3	111	171½	60½	40	1	37	2	63½	71⅞	8⅜	40	1	37	2	31	37½	6½	1½	5	3½	170	300	130	160	400	240
21[6]	39	1	26	3	107	176½	69½	30	1	27	2	64	74	7½	30	1	27	2	31	**39**	8	1½	4½	3	186	312	126	190	400	210
21[7]	33	2	30	1	109½	168	58½	33	3	27	3	63½	73	9½	33	2	29	2	30¾	38½	8	1½	4½	3	190	310	120	190	400	210
21[8]	40	...	40	...	110½	160	59½	40	1	37	2	**62½**	71½	9	40	...	39	1	32	38½	6½	1½	5	3½	200	300	100	210	400	190
21[9]	31	...	26	5	111	180	69	31	...	30	1	64½	72½	8	31	2	28	1	31	38	7	1½	4½	3	214	334	120	200	400	200
21[10]	11	2	7	2	108½	168½	60	12	3	8	1	62½	71½	8⅞	12	...	11	1	31½	38	6½	1½	4	2½	200	260	60	180	375	195
21[11]	19	1	14	4	108½	**184**	75½	18	1	14	3	64	72	8	17	...	15	2	31½	37½	5½	1½	4½	3	190	324	134	200	325	125
22	21	2	19	...	**101½**	148	46½	21	1	18	2	63½	71½	8	21	1	19	1	31	38	7	2	5	3	**150**	250	100	150	**470**	320
21 to 22	372	11	337	24	101½	184	82½	372	22	328	22	62½	73½	11	370	15	340	15	30	39	9	1	5	4	150	340	190	130	470	340

TABLE E.—*Showing maxima and minima for every month, with number of individuals under and over allowable extremes*—Continued.

Age.	Weight.							Height.							Circumference of thorax.							Expansion.			Vital capacity.			Strength.		
	Number.				Minimum.	Maximum.	Difference.	Number.				Minimum.	Maximum.	Difference.	Number.				Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.	Minimum.	Maximum.	Difference.
	Examined.	Under 110 lbs.	110 to 160 lbs.	Over 160 lbs.				Examined.	Under 64 in.	64 to 71 in.	Over 71 in.				Examined.	Under 31 in.	31 to 37 in.	Over 37 in.												
22[1]	17	....	16	1	120	170	50	17	1	16	....	63	70½	7½	17	1	16	....	31	36½	5½	1½	4½	....	190	315	125	195	300	155
22[2]	16	....	14	2	118	174	56	16	2	14	....	63½	71	7½	16	....	16	....	31½	36⅝	6⅛	1·2	5	....	200	266	66	200	325	125
22[3]	9	....	7	2	113	191	78	9	....	9	....	65½	70⅞	5⅜	9	....	6	3	31⅝	39½	8	3	4	....	210	272	52	200	400	200
22[4]	16	....	16	....	122½	154½	32	16	1	13	2	64	73	9	16	....	16	....	31½	36½	4⅝	1½	5	....	210	290	80	150	400	250
22[5]	11	....	11	....	111	159	48	11	1	10	....	63⅜	70	6⅝	11	....	10	1	32	38⅝	6⅝	1½	4½	....	100	262	162	190	400	210
22[6]	11	1	7	3	105	171	66	11	1	9	1	62½	71½	8⅞	11	1	9	1	31	37¼	6¼	2	4½	....	210	300	90	200	400	200
22[7]	12	....	12	....	114	160	46	12	1	10	1	62½	71⅛	8⅝	12	1	11	....	30½	36⅞	6⅜	1½	5	....	198	300	102	180	440	260
22[8]	15	....	14	1	115	160½	45½	15	....	14	1	64½	71⅝	7⅛	15	1	14	....	30⅝	36⅞	6⅜	2	5⅝	....	182	300	112	160	310	150
22[9]	15	....	13	2	117	170	53	15	1	14	....	64½	70⅞	6⅜	15	....	13	2	32½	38½	5⅞	1¾	4½	....	225	310	85	150	375	225
22[10]	12	1	11	....	102½	148	48½	12	....	11	1	65½	71½	5⅞	12	1	11	....	30½	35½	5⅛	2	4	....	191	282	91	150	290	140
22[11]	5	....	4	1	118½	171	52½	5	....	5	....	65½	69½	4¼	5	1	3	1	30½	37¼	7	2½	5½	....	220	300	80	200	310	110
23	8	....	7	1	115½	166	50½	8	1	6	1	63¼	73	9¾	8	1	7	....	31	35½	4½	2	4½	....	190	260	70	240	315	75
22 to 23	147	2	132	13	102½	191	88½	147	9	131	7	62½	73	10½	147	7	132	8	30½	39½	9¼	¼	5½	....	182	315	133	150	440	290

TABLE E.—*Showing minima and maxima for every month, with number of individuals under and over allowable extremes*—Continued.

Age.	Weight. Number. Examined.	Under 110 lbs.	110 to 170 lbs.	Over 170 lbs.	Minimum.	Maximum.	Difference.	Height. Number. Examined.	Under 64 in.	64 to 71 in.	Over 71 in.	Minimum.	Maximum.	Difference.	Circumference of thorax. Number. Examined.	Under 31 in.	31 to 38 in.	Over 38 in.	Minimum.	Maximum.	Difference.	Expansion. Minimum.	Maximum.	Difference.	Vital capacity. Minimum.	Maximum.	Difference.	Strength. Minimum.	Maximum.	Difference.
23 to 24	83	3	74	6	105	**274**	169	83	1	75	7	63½	73½	10	83	1	78	4	**30½**	**44½**	14	1½	5½	4	**160**	310	150	**110**	**450**	340
24 to 25	35	2	32	1	**104**	174	70	35	1	30	4	**63½**	72½	9	35	4	31	....	30½	37½	7	2	4½	2½	190	**320**	130	130	450	320
25 to 26	6	1	4	1	105	198	93	6	....	6	....	64½	67½	3	6	....	5	1	31½	41½	10	3	4	1	214	280	66	130	370	240
26 to 27	1	....	1	....	.....	156	....	1	....	1	....	.....	70½	....	1	....	1	....	.....	35½	..	....	2½	....	.	285	.....	.....	285	....
23 to 27	125	6	111	8	104	274	170	125	2	112	11	63½	73½	10	125	5	115	5	30½	44½	14	1½	5½	4	160	320	160	110	450	340

	Lbs.	Age.	Ht.	C. T.
Greatest weight.....	274	23⁹	73	44½
Least weight.....	61	14²	51½	24½

	In.	Age.	Wt.	C. T.
Greatest height...	74⅞	16⁹	152	35½
Least height.....	49¾	13⁹	62½	25½

	Age.	Wt.	Ht.
Greatest circumf..	44½ 23⁹	274	73
Least circumfer'ce.	24 14⁶	68	56

	Age.
Greatest— 7⅛	17⁷
Least— ⅛	22¹⁰ / 22²

	Age.
Greatest. 340	21⁸
Least.... 116	15⁷

	Age.
Greatest 470	22
Least .. 80	16²

TABLE F.—*Showing number and per* 1,000 *of indivi*

Age.	Weight.													Height.			
	Number examined.	Number.			Per 1,000.			Number.			Per 1,000.			Number examined.	Number.		
		Below.	Near.	Above.	Below.	Near.	Above.	Below.	Between.	Above.	Below.	Between.	Above.		Below.	Near.	Above.
		Mean 95.9 lbs.						70–120 lbs.							Mean 61 in.		
14 to 15 yrs..	269	110	55	104	409	204	387	8	244	17	29	907	64	271	93	36	142
		Mean 106.4 lbs.						80–140 lbs.							Mean 63.9 in.		
15 to 16 yrs..	586	201	157	228	343	268	389	29	548	9	50	935	15	596	235	66	295
		Mean 116.2 lbs.						90–150 lbs.							Mean 65.4 in.		
16 to 17 yrs..	1,107	428	249	430	387	225	388	40	1,049	18	36	948	16	1,123	502	185	436
		Mean 123 lbs.						100–150 lbs.							Mean 66.4 in.		
17 to 18 yrs..	1,424	651	351	422	457	247	296	77	1,276	71	54	896	50	1,437	678	216	543
		Mean 130.1 lbs.						110–160 lbs.							Mean 66.9 in.		
18 to 19 yrs..	753	204	196	353	271	260	469	58	672	23	77	892	31	754	267	135	352
		Mean 133.3 lbs.						110–160 lbs.							Mean 67.3 in.		
19 to 20 yrs..	736	330	185	221	449	251	300	35	664	37	47	902	51	737	336	124	277
		Mean 135.7 lbs.						110–160 lbs.							Mean 67.4 in.		
20 to 21 yrs..	538	206	134	198	383	249	368	15	478	45	28	889	83	538	239	94	205
		Mean 135.3 lbs.						110–160 lbs.							Mean 67.4 in.		
21 to 22 yrs..	372	149	97	125	400	261	339	11	337	24	30	906	64	372	167	70	135
		Mean 136.9 lbs.						110–160 lbs.							Mean 67.6 in.		
22 to 23 yrs..	147	51	40	56	347	272	381	2	132	13	14	898	88	147	68	20	59
		Mean 139 lbs.						110–170 lbs.							Mean 67.8 in.		
23 to 27 yrs..	125	53	24	48	424	192	384	6	111	8	48	888	64	125	53	24	48
General mean per 1,000.....					387	243	370	.....			41	906	53		.....		

duals under and over means and allowable extremes.

Height.									Circumference of thorax.									
Per 1,000.			Number.			Per 1,000.			Number examined.	Number.			Per 1,000.			Number.			Per 1,000.		
Below.	Near.	Above.	Below.	Between.	Above.	Below.	Between.	Above.		Below.	Near.	Above.	Below.	Near.	Above.	Below.	Between.	Above.	Below.	Between.	Above.
Mean 61 in.			57–66 in.							Mean 29 in.						26–32 in.					
343	133	524	24	231	16	89	852	59	260	77	49	134	296	189	515	13	235	12	50	904	46
Mean 63.9 in.			59–68 in.							Mean 30 in.						27–34 in.					
394	111	495	46	516	34	77	866	57	560	246	118	196	439	211	350	24	519	17	43	927	30
Mean 65.4 in.			61–70 in.							Mean 31.5 in.						28–35 in.					
447	165	388	66	1,015	42	59	904	37	1,083	447	224	412	413	207	380	45	1,011	27	42	933	25
Mean 66.4 in.			62–71 in.							Mean 32.3 in.						29–36 in.					
472	150	378	57	1,353	4	40	941	19	1,404	634	314	456	451	224	325	42	1,327	35	30	945	25
Mean 66.9 in.			63–71 in.							Mean 33.1 in.						30–36 in.					
354	179	467	34	699	21	45	927	28	749	218	185	346	291	247	462	18	699	32	24	933	43
Mean 67.3 in.			63–71 in.							Mean 35.4 in.						30–37 in.					
456	168	376	24	678	35	33	920	47	727	344	143	240	473	197	330	10	700	17	14	963	23
Mean 67.4 in.			63–71 in.							Mean 33.8 in.						31–37 in.					
444	175	381	20	489	29	37	909	54	522	202	106	214	387	203	410	26	472	24	50	994	46
Mean 67.4 in.			64–71 in.							Mean 33.9 in.						31–37 in.					
449	188	363	22	328	22	59	882	59	370	136	71	163	368	192	440	15	340	15	40	920	40
Mean 67.6 in.			64–71 in.							Mean 34 in.						31–37 in.					
463	136	401	9	131	7	61	891	48	147	75	32	40	510	218	272	7	132	8	48	898	54
Mean 67.8 in.			64–71 in.							Mean 34.3 in.						31–38 in.					
424	192	384	2	112	11	16	896	88	125	69	13	43	552	104	344	5	115	5	40	920	40
425	159	416	.....			51	892	50		.....			418	199	383	.....			38	925	37

No less care is observed in the recruiting of boys for apprentices. The department has in commission five training ships, and during the year 1879 there were in service 1,464 boys serving in them and other vessels. Various ports have been visited in order that all parts of the country should be represented and the best materials obtained. Surgeon J. S. KNIGHT, attached to the Michigan, makes the following remarks relative to recruiting on the upper lakes:

At Chicago, 109 boys were examined, 57 of whom were rejected, 52 accepted, and 43 shipped.
At Milwaukee, 26 were examined, 18 of whom were rejected, 8 accepted, and 3 shipped.
At Sheboygan, 6 were examined, 3 of whom were rejected, 3 passed, and 1 shipped.
At Green Bay, 7 were examined, 5 of whom were rejected, 2 accepted, and 1 shipped.
At Port Huron, 16 were examined, 12 of whom were rejected, 4 accepted, and 1 shipped.
At Detroit, 15 were examined, 10 of whom were rejected, 5 accepted, and 4 shipped.
At Toledo, 35 were examined, 24 of whom were rejected, 11 accepted, and 5 shipped.
At Cleveland, 31 were examined, 15 of whom were rejected, 16 accepted, and 9 shipped.
At Buffalo, 40 were examined, 30 of whom were rejected, 10 accepted, and 7 shipped.
At Erie, 4 were examined, 1 of whom was rejected, 3 accepted, and 1 shipped.
Making in all 289 examined, 175 of whom were rejected, 114 accepted, and only 75 shipped.

The reason why so many of those passed were not shipped is due in a great measure to the fact that it was not ascertained that they had or had not their parents' or guardians' consent to ship before being sent to be examined physically, and it is more than probable that there were a few at least who presented themselves for examination with no intention of entering the service, but merely to find out if they were physically qualified. I detected one boy, who presented himself the second time for examination under the same name, who had been rejected a few days before for color blindness.

The number rejected in proportion to the number of applicants is greater than I supposed it would be in boys from 15 to 18 years of age.

In the large cities the average number disqualified in proportion to the number examined was much greater than in the smaller towns.

Fully two-thirds of those accepted at Chicago were from the rural districts of Illinois, and the States of Iowa, Indiana, and Wisconsin. Those who presented themselves from the small interior towns, and particularly those brought up on farms, rarely failed to come up to the standard as required by the regulations. The most prominent physical defects met with were varicocele, retarded development, defective eyesight, and bad teeth, in the order mentioned. May not the great number in the cities who are physically disqualified, as compared with those in the country, be caused by the more irregular and immoral habits of the former, as well as less wholesome food, bad ventilation of the sleeping apartments of many, and also the less salubrious atmosphere of cities as compared with that in the country?

Passed Assistant Surgeon MAGRUDER reports that during the past year the number of applicants for enlistment has been small when compared with previous years. He says:

This was owing to the little time devoted to enlistments, and constant cruising during the greater part of the year. The greatest possible care has been exercised in the examination of recruits. The percentage accepted has been larger than during any previous year. This has been due not only to the extension of the age limitation, but because of the much better material presented for enlistment. The most frequent cause of rejection has been from "*irritable heart*," found most frequently in boys with abnormally developed sexual organs, or who use tobacco to excess. In fact, I have met with no case of this affection that could not be attributed to the use of tobacco or to masturbation. Some of the above cases had a heart-beat of from 120 to 140, without symptoms of organic disease, and even in these cases the pulsations were much increased by exertion. Many of those rejected for phthisis, badly developed chests, with rude respiration, tonsillitis, etc., were from manufacturing towns, and had been engaged in cotton or other mills.

Valvular disease of the heart, scrofulous appearance, serrated and decayed teeth, syphilis, etc., were among the more frequent causes of rejection.

The ship has been kept thoroughly clean; the exercises have been constant; she has maintained her reputation for discipline and efficiency; and with the exception of the very frequent wetting of the covered decks, everything has been done to promote the health and comfort of the boys.

In conclusion, I would suggest that when training-ships are at sea the boys be divided into three or more watches, as "watch and watch" does not afford young

boys, many under the age of sixteen years, sufficient time for sleep. The necessity for more hours of sleep for boys was well shown on board this vessel during the past summer.

In regard to the several causes of rejection, the following interesting notes, prepared by Dr. GIHON from the annexed table supplied by the Bureau, are presented. He has added to the value of the table by contrasting the differences between cadets and apprentices:

In connection with the enlistment of apprentices for the naval service, it is interesting to note the large proportion of applicants rejected on account of their physical disqualifications. More than one-half of the 2,347 * boys examined during the year 1879, an average of 637 per thousand were rejected for bodily infirmities of various kinds. Locality does not appear to have had much to do with this result, for while it was at first supposed that the training-ships were only able to attract "wharf-rats" and idle vagabonds about the seaports, when naval rendezvous were established in the large Western cities in the hope of recruiting from a healthier and hardier class, the proportion of unfit was relatively as large. Thus in every thousand there were disqualified—

On board U. S. S. Portsmouth, on the Atlantic coast	555
On board U. S. S. Saratoga, on the Atlantic coast	566
On board U. S. S. Minnesota, at New York and neighboring ports	664
On board U. S. S. St. Louis, at Philadelphia	798
On board U. S. S. Passaic, at Washington	660
On board U. S. S. Michigan, at Chicago and other lake ports	605
At United States naval rendezvous, Saint Louis, Mo	488
At United States naval rendezvous, Cincinnati, Ohio	581
At United States naval rendezvous, Terre Haute, Ind	658

The general average being—

At Atlantic seaports	664
At lake ports	605
At Western cities	523

The physical inferiority of the classes from which these lads have been drawn is strikingly manifest, when among twice the number of candidates examined for admission into the United States Naval Academy, representing the great mass of the people of all sections of the country, less than one-tenth as many have been found disqualified. Table A exhibits the particular disabilities respectively affecting both classes A wider and more intelligent knowledge of the requirements and preliminary examinations by physicians at home, doubtless, have deterred many from risking a fruitless journey to Annapolis, when the poverty-stricken parents of an idle, vicious, or unhealthy lad had only to take him to a neighboring vessel or recruiting office, hoping, if not ignorant of his disability, that it might escape detection.

A fairer comparison of the applicants for apprenticeships in the naval service is, probably, with the younger recruits for the Army. Medical Purveyor BAXTER'S elaborate *Medical and Anthropological Statistics* of examinations for enlistments during the civil war, show that among every thousand youths under twenty years of age 268 were rejected, a number not much in excess of those refused during the next quinquennial period, and nearly one hundred less than those of all ages.

The detailed exhibit of the classes of diseases, injuries, and physical defects for which rejections have taken place among applicants for apprenticeship, candidates for the Naval Academy, cadets examined for graduation, and recruits for the military service, shown in Table B, enables comparison as to their relative frequency.

The cadets examined for final graduation represent young men, between twenty and twenty-five years of age, under the most favorable conditions, the feeble, diseased, and unpromising having been eliminated prior to their admission, and the remainder having lived subject to rigid sanitary discipline during their four years' residence at the school, and having been again examined before leaving. Their disabilities at their final examination preparatory to graduating and becoming midshipmen, represent, therefore, those physical infirmities which have been developed *de novo*, or have sprung from latent predisposing tendencies during their two years' service at sea. Tuberculosis and syphilis, defects of vision, and local affections of the genital organs comprehend all but a fraction, venereal disease and tubercle, as among young men everywhere, being the great sources of constitutional impairment.

* Two hundred and eighty-nine boys, of whom 175 were rejected, examined at lake ports, on board the U. S. S. Michigan, have been excluded from the classification of disabilities in the tables, the returns required not having been made.

With candidates for admission to the Naval Academy, whose ages range from fourteen to twenty, defects of vision, chiefly myopia, malformations, and other imperfections of the external organs, weakly and cachectic constitutions, representing the ills transmitted by inheritance, constitute 80 per cent. of the rejections.

Among applicants for enlistment as apprentices, being boys of the same average age as the former, affections of the eye are five times as numerous, feeble and cachectic constitutions six times as many, and organic defects of the exterior nine times as frequent. Varicocele, generally associated with relaxed and debilitated conditions elsewhere, occurs twelve times as often. Tonsillitis and chronic affections of the ear, the consequences of infantile disorders left to themselves, and carious and defective teeth, the evidences of personal inattention, each constitute about the same proportion or sixty-eight per thousand. Unsanitary surroundings, mal-nutrition, parental neglect, evil associations and premature vicious indulgences (twenty per thousand having syphilis and gonorrhea, and ten per thousand showing by their irritable hearts and anæmic appearance the influence of tobacco-poisoning), sufficiently explain the excess of physical infirmities among the poorer classes, who seek employment for their sons in the Navy, before the mast.

It is evident, therefore, that the material from which the apprentice boys are chosen must include a preponderance of unsuitable subjects, and that examining officers must, consequently, exercise the utmost carefulness in their inspections, lest any obscure forms of internal disorder and constitutional lesion may escape recognition.

TABLE A.—*Showing number and causes of rejection of applicants for enlistment as apprentices in the United States Navy for the year* 1879*; and comparative number of similar rejections of candidates for admission to United States Naval Academy since its establishment, and of cadets examined for final graduation.*

Disabilities.	APPRENTICES. Vessels and stations. U. S. S. Portsmouth.	U. S. S. Saratoga.	U. S. S. Saint Louis.	U. S. S. Passaic.	U. S. S. Minnesota.	Naval rendezvous, Saint Louis.	Naval rendezvous, Cincinnati.	Naval rendezvous, Terre Haute.	Aggregate.	CADETS. Examined for admission.	Examined for graduation.
I.—ZYMOTIC DISEASES.											
Malarial cachexia	---	---	---	---	8	---	---	---	8	2	---
Aggregate	---	---	---	---	8	---	---	---	8	2	---
II.—CONSTITUTIONAL DISEASES.											
Adynamia	---	---	---	---	---	---	---	---	---	1	1
Feeble constitution, retarded development, &c.	---	---	---	---	---	---	---	---	---	21	---
Anæmia	---	---	1	---	3	1	---	---	5	---	---
Rheumatismus	1	---	---	---	---	---	---	---	1	---	---
Scrofula	1	---	1	1	4	4	1	---	12	4	---
Syphilis	2	---	3	2	16	1	---	---	24	2	4
Tuberculosis	---	5	10	5	8	1	---	---	29	---	4
Aggregate	4	5	15	8	31	7	1	---	71	28	9
III.—DISEASES OF THE EYE.											
Achromatopsia	3	1	1	---	4	---	---	---	9	1	---
Cornea opacitas	---	---	---	---	---	---	---	---	---	2	---
Myopia	---	---	3	---	94	7	3	---	107	60	4
Ophthalmia	---	---	---	---	---	---	---	---	---	1	---
Strabismus	---	---	---	---	8	2	---	---	10	---	---
Visus deterior	7	3	12	5	22	4	6	3	62	22	3
Aggregate	10	4	16	5	128	13	9	3	188	86	7

TABLE A.—*Showing number and causes of rejection of applicants for enlistment, &c.*—Cont'd.

Disabilities.	APPRENTICES. Vessels and stations. U. S. S. Portsmouth.	U. S. S. Saratoga.	U. S. S. Saint Louis.	U. S. S. Passaic.	U. S. S. Minnesota.	Naval rendezvous, Saint Louis	Naval rendezvous, Cincinnati.	Naval rendezvous, Terre Haute.	Aggregate.	CADETS. Examined for admission.	Examined for graduation.
IV.—DISEASES OF THE EAR.											
Otitis and surditas	....	....	2	2	11	4	....	3	22	.....	....
Aggregate	....	....	2	2	11	4	....	3	22	.....	....
V.—DISEASES OF THE NOSE.											
Ozæna	....	....	....	....	.....	....	....	....	.....	1	....
Polypus	....	....	....	....	3	....	....	....	3	.....	....
Aggregate	....	....	....	....	3	....	....	....	3	1	....
VI.—DISEASES OF THE CIRCULATORY SYSTEM.											
Angina pectoris	....	....	....	....	.....	....	....	....	.....	1	....
Cor irritabile	....	8	1	....	.....	....	....	....	9	.....	....
Morbi valvularum cordis	....	5	6	1	17	..	1	....	30	12	1
Palpitatio	2	2	1	....	.....	5	....	....	10	1	....
Varix	....	....	5	1	7	1	....	....	14	.....	....
Aggregate	2	15	13	2	24	6	1	....	63	14	1
VII.—DISEASES OF THE ABSORBENT SYSTEM.											
Adenitis	....	....	1	....	.....	1	....	..	2	.....	....
Aggregate	....	....	1	....	.....	1	....	....	2	.....	....
VIII.—DISEASES OF THE RESPIRATORY SYSTEM.											
Catarrhus nasalis	....	1	4	....	6	3	....	2	16	2	....
Insufficient expansion	....	....	4	3	1	8	....	....	16	1	....
Deficient size of chest	2	3	7	1	39	3	....	....	55	1	....
Pulmonary predisposition	....	....	....	....	.....	..	....	....	.....	10	....
Aggregate	2	4	15	4	46	14	....	2	87	14	....
IX.—DISEASES OF THE DIGESTIVE SYSTEM.											
Dentium morbi	18	10	20	7	83	1	2	....	141	5	....
Hernia	5	2	2	4	10	4	....	1	28	10	1
Hæmorrhois	....	....	3	6	24	7	5	1	46	2	....
Icterus	....	....	....	....	1	1	....	....	2	.....	....
Pharyngitis	....	....	....	....	5	3	....	....	8	.....	....
Tonsillitis	...	10	8	4	87	6	....	4	119	5	....
Aggregate	23	22	33	21	210	22	7	6	344	22	1
X.—DISEASES OF THE GENITAL SYSTEM.											
Balanitis	....	1	....	1	.....	1	....	....	3	.....	....
Cryptorchis	...	1	...	1	6	....	....	....	8	6	....
Gonorrhœa	2	....	1	2	8	1	....	....	14	.....	....
Hydrocele	....	....	1	....	3	....	....	....	4	2	....
Orchitis	1	....	....	....	14	....	....	....	15	.....	....
Phymosis	1	....	....	....	14	....	....	....	15	.....	....
Varicocele	7	1	9	12	70	13	8	5	125	19	5
Aggregate	11	3	11	16	115	15	8	5	184	27	5

TABLE A.—*Showing number and causes of rejection of applicants for enlistment, &c*—Cont'd.

Disabilities.	APPRENTICES. Vessels and stations. U. S. S. Portsmouth.	U. S. S. Saratoga.	U. S. S. Saint Louis.	U. S. S. Passaic.	U. S. S. Minnesota.	Naval rendezvous, Saint Louis.	Naval rendezvous, Cincinnati.	Naval rendezvous, Terre Haute.	Aggregate.	CADETS. Examined for admission.	Examined for graduation.
XI.—DISEASES OF THE ORGANS OF LOCOMOTION.											
Ankylosis	....	....	2	....	4	....	....	....	6	2	....
Caries	....	....	....	....	....	....	....	....	....	1	....
Spina incurvata	2	....	14	2	11	....	....	....	29	8	....
Talipes	....	....	1	....	1	....	1	....	3	....	....
Aggregate	2	....	17	2	16	....	1	....	38	11	....
XII.—DISEASES OF THE CUTANEOUS SYSTEM.											
Chloasma	....	....	....	1	....	....	....	....	1	....	....
Impetigo	....	....	....	....	....	....	....	....	....	1	....
Pediculi	....	....	1	....	2	1	....	....	4	....	....
Ulcus	....	....	....	....	1	1	....	....	2	....	....
Unguis involuta	1	....	2	1	6	....	....	....	10	2	....
Morbi varii	....	1	1	1	45	1	....	....	49	1	....
Aggregate	1	1	4	3	54	3	....	....	66	4	....
XIII.—WOUNDS AND INJURIES.											
Fractura	....	....	....	....	2	....	....	....	2	....	....
Luxatio	2	....	....	....	1	....	....	....	3	....	....
Strenma	....	....	....	....	1	1	....	....	2	....	....
Vulnus incisum	....	....	....	1	1	....	1	....	3	....	....
Vulnus sclopetarium	....	....	....	....	....	....	....	....	....	1	....
Aggregate	2	..	..	1	5	1	1	....	10	1	....
XIV.—MALFORMATIONS, DEFORMITIES, AND DEFICIENCIES.											
Deformity of arm	....	....	....	....	....	....	....	....	....	1	....
Deformity of hand	....	....	....	....	....	....	....	....	....	1	....
Deformity of thigh	....	....	....	....	....	....	....	....	....	1	....
Loss of fingers	....	1	....	....	1	1	2	....	5	1	....
Loss of toes	....	....	....	....	....	....	....	....	....	1	....
Stammering	....	....	....	1	....	....	....	....	1	2	....
Under size	....	4	5	5	91	4	....	6	115	45	....
Other defects	3	....	6	....	69	27	6	....	111	....	....
Aggregate	3	5	11	6	161	32	8	6	232	52	....
XV.—NON-MALIGNANT TUMORS.											
Tumor	....	1	....	....	....	....	....	....	1	....	....
Aggregate	....	1	....	....	....	....	....	....	1	....	....
Total rejected	60	60	138	70	812	118	36	25	1, 319	262	23
Total accepted	48	46	35	36	411	124	26	13	739	3, 980	696
Total examined	108	106	173	106	1, 223	242	62	38	2, 058	4, 242	719

TABLE B.—*Showing number of rejections per 1,000 on account of physical disabilities.*

(1.) Of applicants for enlistment as apprentices in United States Navy during year 1879.
(2.) Of candidates for admission into United States Naval Academy since its establishment.
(3.) Of cadets examined preliminary to final graduation.
(4.) Of recruits, substitutes, drafted, and enrolled men in United States Army under 20 years of age.
(5.) Of recruits, substitutes, drafted, and enrolled men in United States Army between 20 and 25 years of age.
(6.) Of recruits, substitutes, drafted, and enrolled men in United States Army of all ages.

Disabilities.	Apprentices.		Candidates for Naval Academy.		Cadets examined for graduation.		Recruits, etc., under 20.		Recruits, etc., between 20 and 25.		Recruits, etc., of all ages.	
	No.	Per 1,000.	No.	Per 1,000.	No.	Per 1,000.	No.	Per 1,000.	No.	Per 1,000.	No.	Per 1,000.
Zymotic diseases	8	3.888	2	0.472	.....	.....	14	0.237	44	0.560	144	0.431
Constitutional diseases	71	34.500	28	6.600	9	12.518	538	9.123	2,434	30.952	9,459	28.294
Diseases of the nervous system	.....	.....	.....	.....	.....	.....	238	4.037	836	10.631	4,012	12.000
Diseases of the eye	188	91.351	86	20.274	7	9.736	512	8.685	1,351	17.180	6,911	20.672
Diseases of the ear	22	10.690	.....	.....	.....	.....	88	1.493	332	4.222	1,980	5.922
Diseases of the nose	3	1.458	1	0.236	.....	.....	9	0.153	23	0.292	137	0.410
Diseases of the circulatory system	63	30.613	14	3.300	1	1.390	480	8.142	1,848	23.500	11,570	34.607
Diseases of the absorbent system	2	0.972	.....	.....	.....	.....	3	0.051	12	0.153	66	0.197
Diseases of the respiratory system	87	42.275	14	3.300	.....	.....	4,453	75.536	1,129	14.357	8,535	25.529
Deficient expansion and pulmonary predisposition	55	26.725	11	2.592	.....	.....	4,268	72.398	480	6.104	3,454	10.331
Diseases of the digestive system	344	167.153	22	5.187	1	1.390	1,089	18.473	3,771	47.953	31,133	93.123
Diseases of the urinary system	.....	.....	.....	.....	.....	.....	6	0.102	79	1.005	755	2.258
Diseases of the genital system	184	89.402	27	6.363	5	6.954	258	4.376	656	8.342	2,424	7.251
Diseases of the organs of locomotion	38	18.465	11	2.592	.....	.....	558	9.465	1,935	24.606	11,629	34.784
Diseases of the cutaneous system	66	32.070	4	0.943	.....	.....	432	7.328	878	11.165	4,258	12.736
Wounds and injuries	10	4.859	1	0.236	.....	.....	322	5.462	1,392	17.701	8,040	24.049
Malformations, deformities, and deficiencies	232	112.731	52	12.258	.....	.....	6,799	115.331	2,502	31.816	21,016	62.861
Under size	115	55.878	45	10.608	.....	.....	1,576	26.734	341	4.336	2,225	6.655
Non-malignant tumors	1	0.486	.....	.....	.....	.....	11	0.187	62	0.788	396	1.184
Unclassified	175	.....	.....	.....	.....	.....	5	0.085	21	0.267	151	0.452
Total rejected	1,319	640.913	262	61.763	23	31.988	15,815	268.269	19,305	245.489	122,616	366.761
Total accepted	739	359.187	3,980	938.237	696	968.012	43,137	731.731	59,334	754.511	211,705	633.239
Aggregate examined	2,058	1,000	4,242	1,000	719	1,000	58,952	1,000	78,639	1,000	334,321	1,000

As to the nativity of the apprentice boys the following table shows that, of 739 shipped, 642 were born in the United States, or 86 per cent., and the remainder were distributed among various foreign nationalities, principally Ireland, Germany, and England:

Table showing the nativity of apprentices enlisted in the United States Navy for the year 1879.

Place of birth.	Name of vessel and station.								
	United States steamer Minnesota.	United States steamer Saratoga.	United States steamer Portsmouth.	United States steamer Saint Louis.	United States steamer Passaic.	Naval rendezvous, Saint Louis, Mo	Naval rendezvous, Cincinnati, Ohio.	Naval rendezvous, Terre Haute, Ind.	Total.
Indiana	5					5	5	13	28
New York	265	3	5	4	2	3			282
Massachusetts	18	12	27		1				58
Missouri				1	2	62	1		66
Pennsylvania	11	4	1	21	6	4			47
New Jersey	18	1		4	4		2		29
Illinois	2					27	3		32
Ohio	3				2	2	10		17
Connecticut	10	4		1					15
Maine	5	2	6						13
Rhode Island	3	6	2						11
Maryland	3		1		5	1			10
Virginia	4	5			1				10
Michigan	5								5
Mississippi									
Kansas						2			2
Kentucky						1	3		4
New Hampshire	1		3						4
West Virginia					1	1			2
Tennessee						1	1		2
Louisiana						4			4
Vermont	3								3
South Carolina					1				1
North Carolina		1							1
Arkansas							1		1
Georgia	1								1
Delaware					1				1
Minnesota					1				1
Iowa						1			1
Wisconsin						1			1
Texas									
District of Columbia	2	7			9				18
Ireland	14			2					16
Germany	10			1		3			14
England	10			1		1			12
Canada	4		2			2			8
Norway	2								2
Sweden	2								2
France	2					1			3
Nova Scotia	2								2
West Indies	2	1							3
Cape Colony			1						1
Scotland	1					1			2
Isle of Jersey	1								1
Denmark	1								1
Austria	1					1			2
	411	46	48	35	36	124	26	13	739

It is a matter of vital importance to the Navy that men of the best physical development obtained by the usual rigorous system of inspection should be sustained at this high standard of health. Hygienic science has, within a few years, rendered incalculable advantages as regards ventilation, food, raimant, etc., to those whose inclinations or necessities lead them to pursue a life at sea. Wise legal enactments

in this country and in most of the enlightened nations of the world stand as barriers between mercantile sailors and the captains and owners of vessels which are intended to secure to the former these advantages. Naval sailors are the wards of the nation, which cares for them for the weightest reasons of obligation, interest, and humanity; and how well the trust has been administered will appear when the moral and material condition of the present sailor is contrasted with that of the sailors of most naval services a quarter of a century ago. It is believed that the naval department of this Government now occupies the first place in all the ameliorations pointed out by modern sanitary science in the ventilation of its ships, in providing wholesome and abundant food and suitable clothing for the men and in increasing their happiness by indulgencies of various sorts, and in encouraging mental improvement.

In my last report I alluded to the subject of ventilation, and spoke of the apparatus placed on the Richmond. The good results of the plan in promoting the health of the crew furnish the highest degree of encouragement to continue the introduction of the same system on other vessels. Very soon the Brooklyn, Hartford, and Lancaster will be equipped with still more improved ventilating apparatus.

It is also a matter of noteworthy mention that the importance of suitable sick-quarters on ship-board, to which attention was called last year, has been recognized in the large vessels now undergoing repairs. Two sick-bays have been constructed in the waist on the berth-deck, one on either side, which will accommodate eighteen swinging-cots, a number amply sufficient for all ordinary demands. These quarters have contiguous to them a commodious bath-room for the exclusive use of the sick, leaving nothing more to be desired in these respects.

The Navy may well congratulate itself upon this awakening of the spirit of sanitary progress, and it is to be hoped that before the lapse of many years there will not be left one vessel unprovided with all these modern improvements. Although the outlay will be large at first, it will be found the best economy, as the expense incurred will be reimbursed the government within a short period by the higher standard of health thereby secured, by the diminution in the number of medical surveys and pension claims, and the prevention of decay in the hull of the ship.

With the view of determining the influences of meteorological conditions upon disease, the vessels of the Navy have been supplied with apparatus for observations and the results have been carefully recorded. To make these observations more accessible, the Bureau directed Surgeon J. H. Kidder to consolidate the returns, which work was begun last November. The blanks adopted, some of which are appended to this report, are intended to show upon a single page the results obtained upon each vessel during the year, partly by graphic lines and partly by figures. Estimations of carbon dioxide, monthly means of relative humidity, and monthly percentages of sick are shown by the lines. In corresponding columns are shown, by figures, the monthly strength in men, the number of days' sun or rain, monthly means of berth-deck and spar-deck temperature, the number of days in each month on which the lower decks were wet, and the changes of station of the ship. Surgeon J. M. Flint is continuing this work of condensation, and when these observations have been extended over years they will furnish valuable information bearing upon the sanitary condition of the vessels upon which they have been made.

The Bureau had, upon certain considerations, suspected that no dependence could be placed upon the carbon dioxide as a test of the respirability of the air, as pointed out in its previous reports, and these observations

seem to prove that the suspicions were well founded; that on ship-board there were elements of error that vitiated the correctness of any conclusion drawn upon the assumption that carbon dioxide is an index or correlative of the organic matter present. Carbon dioxide is emitted in large quantities from the coal bunkers into the air of the vessel, and from the analysis directed to be made on the Tennessee, Trenton, Alliance, Wyoming, and Kearsarge this elimination is shown to be in constant operation.

Surgeon FLINT comes to the following conclusions from his thorough examinations of the meteorological observations.

1. The condition of the atmosphere is only one among many influences affecting the health of men.
2. Its effect is more marked upon seafaring men than upon other classes, by reason, no doubt, of the exposures to which they are subjected, and the crowded state of the quarters which they occupy.
3. The amount of carbon dioxide, as recorded, seems to be no just measure of the condition of ventilation, or of the respirability of the air.
4. The humidity of the air is evidently an important factor in the causation of disease on ship-board, as shown by comparison of the lines of humidity and percentage of sick. Though the number of abstracts prepared are yet few, it would seem that enough are at hand to show that the correspondence of these lines is not wholly accidental.
5. In ships with shellacked berth-decks the relative humidity is nearly the same with the spar-deck.
6. The use of steam heat for warming the "between decks" reduces at once and greatly the humidity.
7. No obvious connection between temperature of the air and amount of sickness is yet traced. The indications are that low temperatures will be found to increase the sick-list more than high.
8. Of the cruising ships the Powhatan has the highest per cent. of sick for the year, 3.21, besides sending 60 men to hospital. This ship records also the highest average berth-deck humidity, 79.1, the spar-deck humidity being only 71.5. The lowest per cent. of sick is found on the Hartford, .90, and also the lowest relative humidity of both berth and spar decks, 69.8 and 69.4. Next to the Hartford comes the Richmond, with a low per cent. of sick, 1.35, and a low relative humidity of berth-deck.

The cruising vessels, tabulated in order of percentage of sick, give the following record of relative humidity:

Name.	Per cent. of sick.	Sent to hospital.	Humidity.	
			Berth-deck.	Spar-deck.
Hartford	.90	21	69.8	69.4
Richmond	1.35	21	71.8	76.3
Vandalia	1.85	42	77.2	81.5
Alaska	1.92	23	72	78
Quinnebaug	2.72	15	73.9	73.2
Pensacola	3.14	16	76	81
Powhatan	3.21	60	79	71.5

It may be seen that with the exception of the Vandalia the order, according to percentage of sick, represents also the order of classification according to berth-deck humidity. And if the number of men sent to hospital from the Vandalia (42) be taken into account it would place her next to the Powhatan in the degree of unhealthfulness as well as in humidity.

The Bureau, recognizing the importance of thorough chemical and microscopic examination of the air, in order to determine with some degree of certainty the exact amount and character of the influences exerted in the production of disease by its inorganic and organic impurities, has made the subject a matter of special investigation, and although embarrassed by a paucity of funds, the work is slowly progressing, and will undoubtedly produce rich results in time. The study of air-sewage is of immense importance to sanitary science, and the prospects of a rich

yield to pathology are by no means discouraging. This field has not been developed commensurately with its importance, and the Bureau has endeavored to enlist the co-operation not only of the medical officers of the Navy, but also of able observers in various sections of the country, in order that the investigations may be conducted over a large extent of territory. But the attainment of a knowledge of the varying forms revealed by the microscope as present in the atmosphere will demand years of patient labor and comparison of objects found in different localities. This preliminary labor is unavoidable if we hope to determine the causative relation of any particular atmospheric particle or germ to disease. Drs. J. H. Kidder and Flint are now making observations in Washington, and the former of these gentlemen, in his report to the bureau, makes the following remarks, which will serve to illustrate the character and scope of the work undertaken:

On the 22d of May, 1880, while examining an urinary calculus, I noticed numerous microscopic crystals, in the form of needles radiating from dark centers, and bearing a decided resemblance to some of the forms photographed by the Havana Yellow Fever Commission. These appearances were brought to your attention at that time, and, agreeably to your instructions, some efforts were made, in the intervals of other work, to discover their nature and origin. To this end the following experiments were undertaken, and have been prosecuted as opportunity offered until the present time.

1. Glass slips, clean or smeared with glycerine, and small glass disks were exposed to the air both in-doors and out, in different parts of the city of Washington. The solid matters deposited from the air or appearing upon the glass were examined from time to time through the summer, and in some cases photographed.

2. *a*. Large volumes of air were drawn by aspiration through small quantities of boiled and filtered distilled water contained in previously heated vessels. *b*. Conical glass vessels washed with distilled water, but not wiped dry, and containing pounded ice, were exposed to the air both in-doors and out. The moisture condensed from the air upon the outsides of these vessels was collected in small clean vials as it dropped from their apices. *c*. Air was aspirated through bent glass tubes immersed in a mixture of pounded ice and salt until a small quantity of moisture had been collected in a bulb blown on the bend of the tube. *d*. The moisture of the air was collected directly upon glass slips resting upon muslin bags containing ice. The specimens resulting from the procedures *a* and *b* were subjected to qualitative chemical examination; those resulting from *c* and *d* were examined only by the microscope.

3. The elements identified by the preceding experiments as present in the air were combined with one another artificially, the resulting salts evaporated to dryness, and compared with the crystals deposited spontaneously upon glass slips exposed to the air.

4. Glass tubes and small glass disks were made in sufficient number to be issued to the different ships and stations of the Navy, accompanied by the instructions which follow:

"INSTRUCTIONS.

"The glass tubes are intended for the collection and preservation of moisture condensed from the air, and can therefore only be used when ice is to be had. The watch-glasses are for the collection of solid matters suspended in the air, and can be used at any time.

"TO CONDENSE MOISTURE.

"Do not remove the cotton plugs in the ends of the tubes until you are ready to use them. Prepare a solution of crystallized carbolic acid (4 grains) in filtered glycerine (1 fluid ounce). Set the bottle containing this solution into boiling water for twenty minutes. Have in readiness a supply of ice broken into small pieces, common salt, and a stomach-pump or other means of aspiration.*

"Heat one of the glass tubes throughout, by passing it slowly through the flame of a spirit lamp, until the cotton plug begins to grow brown within the tube. Set it aside to cool and fill a tumbler with pounded ice and salt. Remove the cotton plugs and introduce carefully a *single drop* of carbolized glycerine into the glass tube, draw-

*A very good aspirator may be made of a coffee-tin, soldered air-tight, with a short tin tube soldered into its top and bottom. Having measured the capacity of the aspirator, fill it with water, connect the upper opening with the glass tube by a rubber tube, and allow the water to trickle out from below as slowly as possible.

ing it downward by gentle suction (do not blow into the tube) until it occupies a portion of the little bulb blown on the curved portion. Set the crook of the tube into the ice and salt, covering it as completely as possible; connect it with the stomach-pump or aspirator, and draw, very slowly, one cubic foot or more of air through the tube. Moisture contained in the air will condense in the bend of the tube, carrying down with it salts and suspended matters. Seal the bend of the tube by melting the glass in the flame of a spirit lamp at the sharp turn on each side, and drawing it out; and paste a bit of paper upon it inscribed with the number of the observation. Dangers to be avoided are, introduction of foreign bodies in the carbolized glycerine, too rapid aspiration, and overheating of the drop of condensed moisture while sealing the tube.

"TO COLLECT MATTERS SUSPENDED IN THE AIR.

"The watch-glasses, having been wiped clean and gently heated in the spirit-lamp flame, may be left for 24 hours in out of the way corners of the locality to be examined. They are then to be set face to face and returned to their boxes, with a bit of wool above and below the couple, the boxes sealed by pasting a strip of paper around their edges, and the number of the observation inscribed thereon. Specimens should be collected from different parts of the ship or building experimented upon and from the open air."

1.

The air-dust collected upon slides and watch-glasses in various parts of Washington contains, besides the crystals which were the especial objects of study, mineral dust, débris of vegetable tissue, fibers of cotton, wool, silk, linen, hemp, etc., scales and antennæ of insects, particles of soot, starch grains, minute highly refracting dots, pollen grains of various kinds, and certain organized forms which deserve particular mention.

The leaf-hairs, which are illustrated by photographs Nos. 25 and 26, and which resemble those found upon a species of ivy common in the city, were among the commonest and most striking objects observed during May and June. By August they had almost ceased to appear.

Certain septate spores, represented by photographs Nos. 51, 53, and 55, have been numerous in the air throughout the summer. They have been found germinating upon a microscope slide carrying crystals of calcium sulphate, in a pellicle upon the surface of an infusion of tea (by Surgeon J. M. Flint), and growing upon red clover in the yard of the naval dispensary. The photograph (No. 51), from a specimen mounted by Dr. Flint, shows the fungus still attached to its stalk and parasitic upon a stem of clover. Similar spores are figured by Fox (Water, Air, and Food, Philadelphia, 1878, p. 269), and Robin (Traité du Microscope, Paris, 1871, p. 532), who attributes them to *Cladosporium*, a genus of Dematiei (Hyphomycetous fungi). They are probably a form of *Sphæria*. (See Micrographic Dictionary, London, 1875, arts. *Cladosporium* and *Sphæriacei;* Cooke's Handbook of British Fungi, London, 1871, pp. 582, 896.)

Minute, highly-refracting dots, which appeared in almost every specimen examined, were generally attributed to *Micrococcus*, being insoluble in water or glycerine. Sometimes, however, such dots proved to be very small globules of liquid, disappearing instantly upon the addition of water, and changing form when brushed over by a bit of paper. When the solution is re-evaporated after the addition of water, crystals are often found, among which cubes, similar to those characteristic of sodium chloride, have been recognized. At other times, upon damp days, collections of minute highly refracting globules occupy the places of acicular and other crystals which have deliquesced. When distilled water through which air had been passed had been kept, tightly stopped, for several days, the residue after evaporation was often found to contain great numbers of grub-like bodies, curved upon themselves, insoluble in water or glycerine, and not colored by carmine. These bodies resemble no form of bacteria with which I am acquainted, and have not yet shown signs of life when exposed to warmth and moisture. They are figured in the accompanying photograph, No. 66. Dark bodies (provisionally identified as *Phycomyces niteus*), from which innumerable flattened hairs radiate, have appeared upon glasses exposed at various times and places. (Photograph No. 57.)

The appearance illustrated by photograph No. 74 occurred in a slide (No. 31, mic. series), carrying evaporated residue from water through which air had been passed (probably a *mucor*). On the 30th June a slip of glass was smeared with glycerine and exposed to the air out of doors until July 9, when it was found to be very rich in spores, débris of vegetable tissue and of insects, and other solid particles. It remained uncovered in a slide-drawer until August 23, when numerous bodies similar to that shown by photograph 76 were found in the glycerine. Upon the addition of more glycerine, after taking the photograph, the spiculæ entirely disappeared, and have not reappeared up to the present time. The body illustrated by No. 70 appeared upon the glass cover of a slide which had been mounted and set aside from July 17 until September 14.

Rod-like crystals (see Nos. 21, 13, 38) have appeared upon slides and watch-glasses exposed to the air at all times and places, after about twenty-four hours' exposure.

They do not deliquesce readily, are stable in form, and are usually found in groups. Similar forms have been produced by the artificial crystallization of dilute solutions of potassium-sulphate (No. 42) and ammonium-sulphate. They do not appear to be connected with the decomposition of organic matter upon the glass, since they occur as often at a distance from as in the neighborhood of particles of organic dust.

Acicular and stellate forms (Photographs 21, 39, 64, 65, 68, and 71) have been observed frequently during the summer, upon slides exposed to the air within doors for more than two or three days. In a single instance a crystal of this kind was found upon a watch-glass exposed for but thirty-six hours to the air of an inhabited bed-room. All of these forms (as well as the rods) disappear upon the addition of water, glycerine, or Canada balsam, and deliquesce spontaneously when the relative humidity of the atmosphere exceeds 75 (saturation being represented by 100). As the relative humidity of the air diminishes, the crystals reappear. The stellate forms (No. 39) are less affected by moisture than those presenting long slender needles (Nos. 21, 68, 64, and 71). Stellate crystals (No. 39) have been found in large numbers upon watch-glasses as they come from the maker's hands, and occasionally in the air of inhabited bed-rooms. I have not yet observed this figure of crystal in the process of formation, and believe it to represent a different salt to the long needles shown in Nos. 21 and 64 and in the photographs of the Havana Commission. The crystals characterized by long needles have been observed, partly formed, in the midst of swarms of highly refracting dots or globules, which I suppose to be minute drops of the dissolved salt of which they are composed. Similar congeries of globules have been often observed to precede the appearance of the crystals upon the slide, and to occupy the immediate neighborhood of a particle of epithelium or (apparently) organic matter of some other kind. Isolated spiculæ, pointed at their ends (No. 72), have also been observed in swarms, but showing no tendency to aggregate around a center. No. 71 shows a particle of epithelium from which acicular crystals appear to be shooting forth. The spiculæ were observed after the lapse of 58 days from the preparation of the slide. The specimen illustrated by No. 65, which is quite different from any others observed by me, appeared upon a watch-glass 36 days after the original preparation of the specimen. Its crystalline character appears to me to be doubtful. No. 84 is from a specimen of water through which a large bulk of air had been aspirated, evaporated to dryness, redissolved in distilled water, and treated with a drop of hydrochloric acid. Upon being re-evaporated the forms represented appeared in large numbers.

It is plain that, considering the extreme minuteness of these crystals, there is little prospect of success in attempts to isolate a single specimen from neighboring particles of other substances so as to discover its composition by actual analysis. The only resource which has suggested itself to me has been the examination of evaporated residues from dilute solutions of various salts ascertained or conjectured to be present in the air, and the comparison of their microscopic forms with those deposited upon slides exposed to the air. Crystals somewhat resembling those under consideration have been produced from sodium carbonate, sodium butyrate, and calcium butyrate, but absolute identity of form has not yet been artificially obtained. Both rods and acicular crystals are found plentifully in the residue from perspiration dried upon a glass slide, as figured in photographs Nos. 89 and 90.

Other crystals, besides these acicular forms, have been observed upon slides exposed to the air and in the evaporated residues from moisture condensed upon conical glass vessels filled with ice. Some of these have been identified, so far as close resemblance of form can be accepted as identification, among which may be named sodium chloride, ammonium chloride, sodium carbonate, sodium bicarbonate, sodium sulphate, and ammonium carbonate. Crosslets and certain minute crystals resembling the "whetstones" of uric acid remain unidentified.

2.

a. July 20.—Thirty cubic centimeters of freshly-distilled water were boiled in a clean test tube, which had been previously heated nearly to redness. Through this water about 21 gallons of air were drawn by means of a large tin aspirator, the apparatus being placed opposite an open north window and a fresh northwest breeze blowing. It was found to be impossible to cause the air to pass through steadily, owing to the springing of the tin walls of the aspirator. No free ammonia was found in the water by Nessler's reagent, and the microscope showed but a trifling amount of solid matter in the evaporated residue. Epithelial scales and sodium chloride (cubes) were recognized. Chemical examination was unsatisfactory, owing to faint and undecided character of reactions.

August 6.—About 8 gallons of air from the chemical laboratory were passed through a second similar specimen of 30 cubic centimeters of distilled water, using a small cask as an aspirator. No chemical work was going on at the time and the windows and doors were open. Nessler's reagent showed no free ammonia. Carbonic acid not to be

detected by ordinary tests. Sulphuric acid present. Nitrate of silver gives a distinct white precipitate soluble in nitric acid without effervescence. An organic acid suspected. Examination for phosphoric acid, magnesium and calcium gave negative results. Presence of potassium and sodium uncertain.

August 23.—Passed 16 gallons air through 100 cubic centimeters of freshly-distilled, filtered, and boiled water. A bit of new muslin, boiled in two distilled waters, and washed in a third after attachment, was tied over the inlet tube in order to comminute the bubbles of air. Nessler's reagent showed on free ammonia. The water was evaporated to dryness, redissolved in 10 cubic centimeters distilled water, and found to contain carbon dioxide, sulphuric acid, chlorine, sodium, and potassium. Silver nitrate gave, as before, a white precipitate *partly* soluble in nitric acid, but leaving a white cloud insoluble in ammonia, which may be due to an organic acid. Butyric acid would have caused the reappearance of the precipitate dissolved in nitric acid on the addition of ammonia. All of the experiments were checked by applying the same tests to similar quantities of distilled water.

b. Collected (July 9) about half a fluid ounce of moisture condensed upon the outside of a glass funnel and percolator (stoppered at outlets), filled with pounded ice and salt, in laboratory and open air. The liquid contained free ammonia (by Nessler's reagent) chlorine, sulphuric acid, phosphoric acid (?), calcium (doubtful), potassium, and sodium.

July 10.—Repeated the experiment, using only pounded ice, without salt. The condensed moisture was found to contain ammonia, chlorine, magnesium (?), sodium, and calcium (?). Phosphoric acid could not be recognized in this specimen. The incinerated residue effervesced slightly upon the addition of hydrochloric acid. Ammonium chloride crystals recognized in evaporated residue.

July 19.—Two specimens, about one fluid ounce in all, were collected from different rooms in the naval dispensary and examined together. The condensed moisture thus obtained was evaporated to dryness, redissolved in very little distilled water, and found to contain free ammonia (before evaporation), carbon dioxide, sulphuric acid, chlorine, and calcium; sodium and potassium doubtful.

August 23.—About one-half a fluid ounce of moisture condensed from the open air, upon a glass percolator, was found to contain free ammonia (reaction neutral to test paper). Upon evaporation a scanty yellow residue was left upon the capsule, which blackened and burned away, leaving a scarcely perceptible stain. After addition of distilled water only, sulphuric acid, chlorine, potassium, and sodium were recognized. All of the experiments were checked by blank reactions upon distilled water as under *a*.

The procedures have been given somewhat at length since, owing to the exceeding faintness of the reactions, attempts to repeat them may result in disappointment unless some care be used to prevent the introduction of precipitating bodies in the reagents, and in the manipulations.

The results, which are less satisfactory than I could wish, may be summarized as follows: Water through which air had been passed contained no free ammonia answering to the Nessler reagent. Epithelial scales were always present, and chlorine, sulphuric acid, carbon dioxide, sodium, and potassium were recognized; the three first named in every examination, the three last at different times. There have been grounds for suspecting the presence of an organic acid, precipitable by silver nitrate, the precipitate being soluble in nitric acid.

Moisture condensed from the air upon cold surfaces always gave a reaction (ammonia ?) by the Nessler test. The presence of chlorine, sulphuric acid, calcium, potassium, and sodium was established, with doubtful reactions for phosphoric acid, magnesium, and a suspected organic acid. Certain salts (see p. 49) were provisionally identified by the forms of their microscopic crystals.

c. Microscopic examination of the moisture collected by passing air through a glass tube immersed in a freezing mixture gave no results of importance. The specimens were found to contain an abundance of epithelial scales, minute, highly-refracting dots (*Micrococcus* ?), cubes of sodium chloride, and a few pollen grains. The same remark applies to the examination of moisture condensed directly upon glass slides laid upon bags filled with pounded ice (*d*). The microscopic specimens resulting from these procedures resemble those collected by condensation upon the outsides of conical vessels filled with ice (*b*).

Of the different procedures which have been tried, the best results have followed the process (*b*) of direct condensation from the air. Aspiration of air through water in the manner followed by me was unsatisfactory, the short time occupied by a bubble of air in traversing the quantity of water used and the relatively large size of the bubble itself not permitting solution or precipitation of the foreign bodies suspended or dissolved in the air to any considerable extent. The use of pumice-stone as a filter, suggested by Prof. Ira Remsen (National Board of Health Bulletin, Washington, September 11, 1880), which would doubtless have been an improvement upon the process I adopted, did not occur to me, his paper having been published subsequent to

the experiments above described. I can see no reason, however, why ammonia, or an *amine* responding to the Nessler reagent, should always have appeared in the moisture condensed directly from the air, and not at all from water through which air was passed, at the same time and place.

3.

The elements ascertained or conjectured from the chemical examinations above described to be present in the air were combined as salts and crystallized from very dilute solutions for microscopic examination, as follows: Sulphate of ammonium, calcium, magnesium, potassium, and sodium; carbonate of ammonium, sodium, and potassium; chloride of ammonium, calcium, potassium, and sodium; oxalate of ammonium; phosphate of sodium, butyrate of ammonium, calcium, potassium, and sodium; bicarbonate of sodium.

When dried upon a glass slip and examined by the microscope, sulphate of potassium crystallized in rods strongly resembling those spontaneously formed by exposure to the air. Acicular crystals, somewhat resembling those formed from the air, resulted from the evaporation of sodium carbonate, and the butyrates of ammonium, calcium, and sodium. Sulphate of sodium, chloride of sodium, bicarbonate of sodium, and chloride of ammonium formed crystals apparently identical with some forms which appeared at different times upon slips exposed to the air, or in the residues evaporated from specimens collected by passing air through water, and by direct condensation upon cold surfaces.

No results have yet followed from the issues of the glass tubes and disks described upon page 47, none of the specimens having been returned.

So far as the acicular crystals figured by the Havana Commission are concerned, the results of the investigations here described are that crystals closely resembling the photographs occur frequently upon glass slips exposed to the air in localities where yellow fever does not prevail, and are found in the perspiration; that such crystals do not appear at once, but only after prolonged exposure of the slides to a moderately high temperature (summer heat), suggesting putrefactive changes as probably connected with their formation; and that their chemical composition has not yet been certainly determined, there being reason for suspecting the presence of an organic acid not yet recognized, and for supposing that the various forms of the crystals represent at least two different salts. The far more common rod-like crystals are very probably potassium sulphate.

Incidentally, the photographs herewith submitted illustrate the presence of a number of organic forms which, although perhaps not connected with disease, would doubtless repay farther study.

The photographs representing blood from a case of *Beri-beri*, herewith presented (Nos. 77, 78, 79), were made from specimens furnished by the surgeon-general of the Marine Hospital service. The original specimens were preserved in "Pacinian" fluid, a solution of mercuric chloride and common salt in glycerine and water, and the cases occurred in a Brazilian ship lately arrived at San Francisco from the East Indies. There is in the blood a very decided increase in the number of white corpuscles, which present highly refracting spaces within their interior, supposed to be either vacuoles or portions of the preservative fluid absorbed by osmose. Bacteria, mostly spherical (*micrococcus*) are numerous and active, notwithstanding the Pacinian fluid. The presence of pollen grains and of mucor indicate that the specimens had been for a time exposed to the open air before shipment. No changes were observed in the red corpuscles, other than such as are produced by the action of the Pacinian fluid upon healthy blood.

Specimens of blood furnished by Dr. Simens, of Charleston, S. C., from patients suffering from *dengue* are now under examination. The specimens are prepared in three different ways, viz: 1st, simply dried in thin layers upon slides; 2d, in Pacinian fluid; 3d, corked tightly in small bottles, without preservative fluid. The slides of dried blood are in excellent condition, but show no abnormality other than an increase in the number of white corpuscles; those preserved in Pacinian fluid resemble healthy blood similarly treated; while the specimens treated by no preservative are quite decomposed, swarming with bacteria in rapid multiplication.*

The influence of food upon the health and efficiency of the men is one of commanding importance, and the consideration of the adequacy of the present Navy ration to supply all the elements necessary for the sustenance of the strength and vigor of the crews under the varying circumstances of age, climate, etc., has engaged the attention of the Bureau. It was desirable to invite the attention of the medical officers to the subject and elicit their views. Surgeon Edward Kershner, who has

*Series of the photographs will be supplied to those interested in these investigations on application to the Bureau.

been attached to the naval training ship-Minnesota, discussing the character of the ration in its adaptibility to the naval apprentices, says:

The ration at present used in the Navy was fixed by acts of Congress approved July 18, 1861, July 15, 1870, and May 23, 1873. It appears to have been decided upon after mature deliberation, and with due regard to the requirements of the naval service, but without, of course, taking into consideration the present youthful element which composes the crews of the training-ships. This element requires a modification of old forms in various ways, and probably in none more than in the matter of diet.

The food contained in the ration was intended to support in vigorous action and in various climates the full-grown, strong man, during the best years of his life, when the molecular losses in the tissues of the body are mainly caused by muscular exertion in the daily duties of life. All the processes of physical decay and reconstruction being in this period of life in their most natural and perfect state, it is a natural sequence that all these transitions take place with the least possible waste of diet. The every day loss is therefore supplied by the daily food, with no demand for extra allowance to go toward building up the frame, or supply deficiencies from extraordinary wear or rapid decay, as in old age. Under these circumstances, as a rule, the ration has been sufficient to keep the men in a healthy state, and afford support under almost all circumstances. But at times I have heard the men complain that they did not have as much to eat as they desired. This has generally been at the beginning of a cruise, when from some cause they appear to demand more food than later. I have supposed this to be at least partly due to the fact that they may have been living on starvation diet for some time before enlisting in the Navy, and that it takes them a considerable period to make up past deficiencies. More active physical exertion in drilling, training, etc., in the first part of a cruise, may influence the consumption of food also. This difference in quantity of diet used at various periods of the cruise has been noticed in the British navy.

On the training-ships we receive boys at the age of fifteen years. We have therefore to deal, not with the matured man, but with youth, and the conditions are very different, for here we have to supply material not only to keep the frame up to a normal standard, but to build up the boy into the able-bodied man. In youth the system must store up enough to exceed the expenditures, and the surplus must be devoted to the natural increase of the body. For this purpose, a larger quantity of nutritive material is required. The activity of youth causes also a more rapid physiological change than in manhood. To meet these extraordinary demands on the nutritive functions a larger and more varied diet is demanded, that these changes may go on in a healthy condition. For these reasons a change in the established ration is, in my judgment, desirable, and variety as well as quantity is necessary.

The Navy ration gives 6¼ pounds of bread and 6¼ pounds of meat a week, with one pound of flour. The British soldier on home-service receives 5¼ pounds of meat and 7 pounds of bread weekly, and buys additional bread, vegetables, and groceries out of his pay. The Prussian soldier gets weekly 11 pounds 1 ounce of rye bread and nearly 2¼ pounds of meat; and in the French infantry each man during peace gets weekly 15 pounds of bread, $3\frac{3}{10}$ pounds of meat, with some vegetables, and a little brandy. They are expected to make up deficiencies from private means.

It will be noticed that the bread in all these rations exceed that given in the United States Navy; and in that of France it is more than twice our allowance. It is permitted that the United States Navy ration may be changed so that fresh meat or fresh bread may be substituted for salt meat or biscuit; and the dried vegetables might be set aside and fresh substituted in their place.

A comparison of the schedules of rations of the European governments and my own experience warrants me to recommend a small increase in the ration of bread. I would further suggest the addition of hominy, oat meal, and wheat grits, to be used alternately at breakfast, which now consists mainly of coffee and bread. This would probably require a small additional increase of sugar or molasses to make these articles palatable.

Salted fish and cheese are articles of a wholesome character, and quite nutritious.

The dried potatoes are very rarely used, as the men have a dislike for them. It would be an improvement to issue in their place, whenever it is possible, green potatoes. Other vegetables, issued in season, would also promote the health of the boys—such as turnips, onions, carrots, beets, tomatoes, sweet potatoes. Apples, cresses, etc., would be useful.

The neglect of vegetables in the Navy is, in a physiological point of view, imprudent, and may be a cause of many of the digestive derangements from which sailors suffer and possibly a contributing cause of an inordinate thirst for alcohol, which characterizes and impoverishes so many sailors. To satisfy their instinctive craving for a hydro-carbon, they take one convenient indeed, in some respects, but of which an excess is very unwholesome.

Experience, too, tends to show that the raising of the energies to their full height

of usefulness may be effected by vegetable food quite as well as by the more stimulating and expensive animal nutriment.

A varied, plentiful, and healty diet for its servants will always be a good and economical investment for any government, as it promotes effective, cheerful, and efficient discharge of duty, which is always remunerative.

Surgeon J. H. Kidder, in charge of the laboratory at Washington, was directed to examine the ration with regard to its physiological value, and from his report, dated November 14, 1879, the following extract is made:

According to an exhibit published by the Paymaster-General of the Navy June 1, 1872, and now followed in vessels of war at sea, the daily distribution of the ration, as fixed by Rev. Stat., § 1580 *et seq.*, is as follows:

Sunday.—14 oz. biscuit; ¾ lb. preserved meat; 8 oz. rice; 4 oz. sugar; 0.57 oz. butter; 2 oz. dried potatoes; 1.14 oz. molasses.

Monday.—14 oz. biscuit; 1 lb. salt pork; 8 oz. beans; 4 oz. sugar; 0.57 oz. butter; 1.14 oz. molasses.

Tuesday.—14 oz. biscuit; 1 lb. salt beef; 8 oz. flour; 2 oz. dried fruit; 4 oz. sugar; 0.57 oz. butter; 1.14 oz. molasses.

Wednesday.—14 oz. biscuit; 1 lb. salt pork; 4 oz. sugar; 8 oz. beans or pease; 0.57 oz. butter; 1.14 oz. molasses.

Thursday.—14 oz. biscuit; ¾ lb. preserved meat; 4 oz. sugar; 2 oz. dried potatoes; 0.57 oz. butter; 1.14 oz. molasses.

Friday.—14 oz. biscuit; 1 lb. salt beef; 8 oz. flour; 4 oz. sugar; 2 oz. dried fruit; 0.57 oz. butter; 1.14 oz. molasses.

Saturday.—14 oz. biscuit; 1 lb. salt pork; 4 oz. sugar; 8 oz. beans; 0.57 oz. butter; 1.14 oz. molasses.

One-half oz. tea or 2 oz. coffee issued daily; ½ pint vinegar and 8 oz. pickles issued weekly; 1 lb. fresh bread, or 1 lb. flour, or ½ lb. rice may be substituted for 14 oz. biscuit; ½ lb. rice for ¾ lb. beans or pease, or *vice versa*. Fresh or preserved meat may be substituted for salt in the proportion of 1¼ lb. fresh, or ¾ lb. preserved meat to 1 lb. of salt meat; and vegetables for the other articles in the list (besides meat) to the extent of their money value. Two rations in ten may be commuted.

The value of this sea-ration for each day in water-free food and its constituents (following the classification usually adopted by writers upon hygiene) is shown in Table A.

TABLE A.

Day.	Water.	Nitrogenous.	Fats.	Carbo-hydrates.	Salts.	Water-free food.
Sunday.....oz..	8.79	6.005	2.73	23.48	0.70	32.92
Monday.....do..	9.75	8.12	2.03	19.27	4.08	33.96
Tuesday.....do..	10.10	8.70	0.93	21.58	3.76	35.11
Wednesday.....do..	9.75	8.12	2.03	19.27	4.08	33.96
Thursday.....do..	8.105	5.49	1.607	16.82	1.66	25.72
Friday.....do..	10.10	8.70	0.93	21.58	3.76	35.11
Saturday.....do..	9.75	8.12	2.03	19.27	4.08	33.96
Average.....	9.48	7.61	1.76	20.18	3.16	32.96

No account is taken in the above table of tea, coffee, pickles, or vinegar, their solid constituents being insignificant in quantity.

The Minnesota is, however, nearly always in port, and therefore her crew does not draw the sea-ration analyzed in Table A. The boys take advantage of the permission given by the law and substitute 16 oz. bread for 14 oz. biscuit, 1¼ fresh meat for 1 lb. salt meat, and probably buy fresh vegetables, etc., for the remainder of the value of the ration. Supposing the nutritive value of these purchases to equal that of the portion of the sea-ration for which they are substituted (4 oz. sugar, 8 oz. beans, 1¼ oz. molasses, and 0.57 oz. butter), the nutritive value of the fresh-provision ration becomes that which is exhibited by Table B.

TABLE B.

	Water.	Nitrogenous.	Fats.	Carbo-hydrates.	Salts.	Water-free food.	Total.
Fresh provision ration .....ounces..	19.98	5.44	2.27	16.87	0.66	25.73	45.71

As standard diet tables for comparison I have selected two, Moleschott's and Parkes'. The former is an average of analyses by various continental observers of the food required by the average adult man engaged in *moderate work;* the latter is the result of Dr. Parkes' experimental observations upon two soldiers worked to the limit of their endurance for seventeen days. In Table C these data are compared with each other and with analyses of the rations of the British, German, and French armies, and of the British navy; the instances cited in Dr. Kershner's letter.

TABLE C.

Diet.	Total ounces.	Water.	Nitrogenous.	Fats.	Carbo-hydrates.	Salts.	Water-free food.	Authority.
Moderate work (Moleschott	.....	.....	4.587	2.964	14.257	1.058	22.866	
Hard labor (Parkes)..	.... ..	.....	6.50	4.00	17.00	1.30	29.00	Parkes.
United States Navy sea-ration (average)	42.44	9.48	7.61	1.76	20.18	3.16	32.96	Calculated.
United States Navy fresh-provision ration	45.71	19.98	5.44	2.27	16.87	0.66	25.73	Calculated.
British army (at home)	62.00	38.80	3.86	1.30	17.43	0.81	23.20	Parkes.
British navy, fresh provision.....	57.94	27.85	5.17	1.89	22.14	0.79	30.09	Calculated from adm'lty instructions.
German army	45.31	19.67	5.53	1.45	17.50	0.72	25.64	Parkes.
French army	45.82	20.40	4.58	1.20	18.75	.....	25.42	Parkes.

It appears to be expected in the German and French armies that, when not actually in the field, the men shall pay something themselves towards the expense of cooking and to supplement the ration. The analyses of Table C are calculated for the times when fresh provisions are issued.

The United States Navy sea-ration contains, therefore, all of the physiological elements of food, excepting fats, in quantity considerably above that afforded by the rations of the services with which it is here compared; and likewise above the quantity determined experimentally by Dr. Parkes, as that required by adult men worked to the limit of their strength. When, however, fresh provisions are drawn, the ration loses materially in nutritive power, for the reason that 1 pound of fresh bread and 1¼ pounds of fresh meat do not adequately represent as food 14 ounces biscuit and 1 pound salted meat. This statement will be made clearer by the comparison set forth in Table D.

TABLE D.

Article.	Water.	Nitrogenous.	Fats.	Carbo-hydrates.	Salts.	Water-free food.	Remarks.
¼ lb. salted beef.....ounce..	7.84	4.64	.02	.....	3.36	8.16	
1 lb. salted pork.....do....	7.04	4.18	1.12	.....	3.65	8.96	
1¼ lb. fresh meat.....do....	12.00	2.40	1.30	.....	0.26	4.00	+ 4 oz. bone.
12 oz. preserved meat.....do....	6.48	3.30	1.85	.....	0.35	5.52	
14 oz. biscuit.....do....	1.13	2.18	0.18	10.27	0.24	12.87	
16 oz. flour.....do....	2.50	1.76	0.32	11.25	0.17	13.50	
16 oz. fresh bread .....do....	6.40	1.28	0.24	7.87	0.21	9.60	

Fresh meat contains about ¼ bone, and 75 per cent. of the remainder is water, while fresh bread contains ⅜ water. Hence the British allowance of fresh bread (24–26½ ounces) comes much nearer a nutritive equivalent for the biscuit than our own. But notwithstanding this decided shortcoming in the item of bread, the United States Navy fresh-provision ration still contains about the maximum quantity of carbo-hydrates (farinaceous food) required by men at hard labor, the less quantity of bread contained in our ration being partly made up by the issue of rice, beans, and sugar.

The fresh-provision ration falls short of the standard diet not in farinaceous, but in nitrogenous and fatty food. Assuming that the hard-labor diet determined by Dr. Parkes is a judiciously selected standard for the present purpose, and bearing in mind the fact that the nitrogenous element is particularly important to boys who are not yet fully grown, it is evident that the fresh-provision ration falls short of the standard 1.06 ounces in nitrogenous food (about ⅛), and 1.73 ounces in fatty food (nearly ¼), the latter element being still more deficient in the sea-ration.

While no one of the physiological elements, viz, nitrogenous matter, fats, carbo-hydrates, and salts, into which the food of man is usually divided by writers upon hygiene, can be said to accomplish its purpose by itself, and each serves other ends than the principal function attributed to it, there is a tolerably broad distinction between the parts played by the several food constituents in the nutrition of the human body.

Nitrogenous, albuminous, or flesh-forming food, as it has been variously called, is important mainly in the renewal of the substance of the body and in the production of new tissue, as in the case of these growing boys. To provide for their growth a full supply of nitrogen is required, which must be furnished in the food either as meat (albumen) or as gluten in such vegetable products as maize, oatmeal, and beans. Nitrogenous food also becomes an important factor in digestion, contributing largely to the composition of the digestive ferments (pepsin, ptyalin, pancreatin, etc.), and when taken in excess promoting the combustion of fats.

With regard to the carbo-hydrates, Dr. Letheby writes:*

"In the present state of our knowledge, it appears that the force manifested in muscular exertion and the processes of nutrition is supplied by the oxidation of the hydrogen and carbon of the food, whether combined with nitrogen or not, and, in man at least, principally by that class of foods which is called non-nitrogenous (carbo-hydrates), such as starch and sugar; while that the chief function of nitrogenous matter is to *repair tissue* there can be no doubt." The celebrated experiment of Fick and Wislicenus indicates that non-nitrogenous foods supply animal heat and muscular energy largely by their direct oxidation without conversion into tissue, and the measure of muscular energy put forth is therefore the quantity of carbon dioxide and water thrown off by the lungs and skin, and not, as has been long supposed, the amount of nitrogenous matter (urea, etc.) to be found in the excretions.

Recent investigations indicate that fats, although hydro-carbons, possess food properties which distinguish them from other compounds of hydrogen and carbon. Fat not only contributes to the production of animal heat and muscular energy much more actively than other hydro-carbons ("the power of fat is about 2½ times as great as that of sugar," Letheby, p. 4), but it also plays an important part in digestion, promoting the secretion of bile, the formation of blood and new tissue, and disintegrating those parts which have become effete. It thus resembles nitrogenous substances in entering into the composition of the tissues, and other hydro-carbons in the production, by its oxidation, of heat and muscular energy, while it exercises an important influence upon the digestion, and is capable of being stored up (as adipose tissue) for consumption in times of extraordinary demand upon the physical resources (in fevers for example). Fatty substances are the natural remedy for diseases characterized by defective nutrition, and are an exceedingly important element in food.

Salts are required chiefly for their chemical properties, supplying the inorganic proximate principles of the body and facilitating the chemical reactions incident to nutrition and the processes of osmose.

The growth and maintenance of the bodies of the apprentice boys is provided for by their nitrogenous food; the energy exerted in their daily labor and their animal heat by *carbo-hydrates; fats* are important factors in the processes of their nutrition, and *salts* are necessary agents in the chemical changes which accompany these processes. The tables which have been already presented show that the Navy fresh-provision ration is deficient in two of the four physiological elements of food, and that the complaint of the boys has some foundation in fact, although the remedy suggested by Surgeon Kershner is perhaps not that which will best supply the deficiency, since experiments have shown that farinaceous food in excess of the capacity of the intestinal fluids for its digestion passes through the body unchanged, without having contributed to its support.

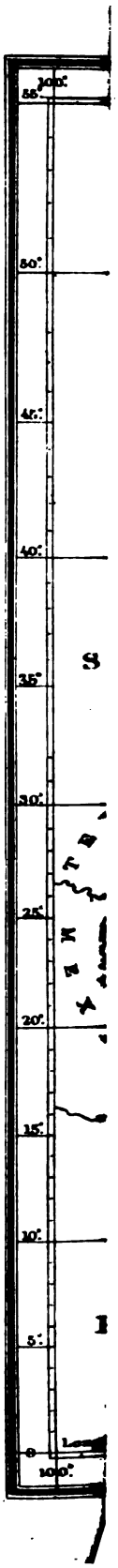
Should it be contemplated to make a change in the law governing the Navy ration Dr. Kershner's suggestions with regard to the introduction of oatmeal, hominy, and

* On Food, London, 1872.

SANITARY CONDITION

OF THE

NORTH ATLANTIC STATION.


100°
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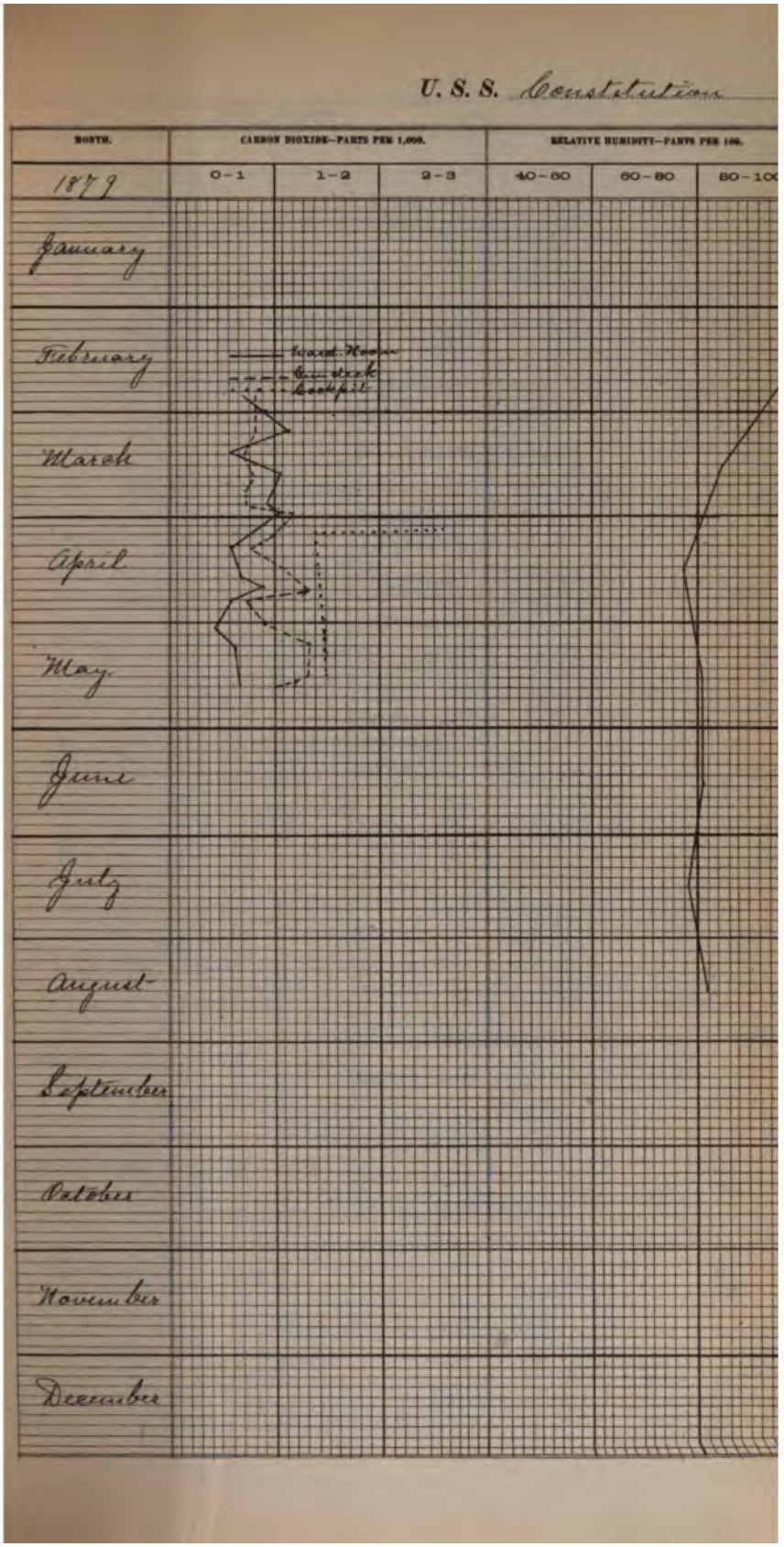
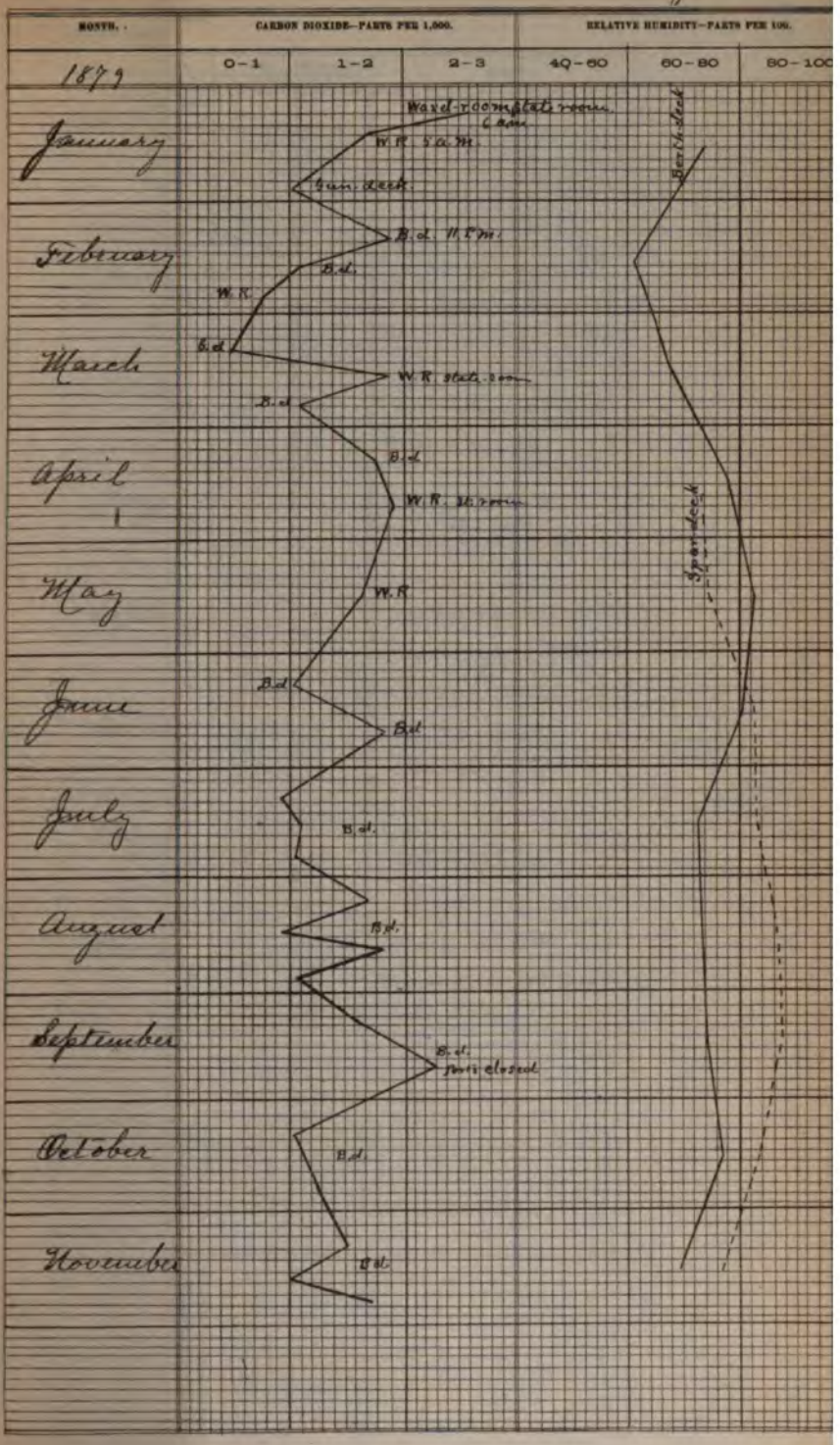
U. S. S. Constitution



U. S. S. Saratoga



No Spar-deck observations during 1st 2

MARCH 23, 1879.

Peter Egan, boatswain's mate; age 43—*Febris flava*. Turned in quite well last night, awakened about 11 o'clock feeling ill, and before morning was so sick that he could not move without assistance. His symptoms were almost exactly those of Sanders, described before: Suffused eyes; headache and lumbar pains, and much oppression about stomach; pulse full, 95; temp., 103°.5; tongue thickly coated. An emetic of ipecac., 3ss, with hydr. chlo. mit., was given which acted and gave relief; had a hot bath this morning, and became more quiet; during the day, temperature has been from 103°.5 to 104, pulse 83 to 98, skin dry. Had a passage this morning. Treatment: R. hyd. chlo. mit., gr. $\frac{1}{6}$, every two hours; barley-water, pounded ice, and extreme quiet. At 7 o'clock is resting quietly and easily, since a second hot bath at 4 o'clock; at 9 o'clock, resting quietly.

March 24.—Has been very restless during the night, and continues so, with pulse varying from 84 to 95, full; temp. 103°.6 to 105°. This morning early had two profuse discharges from bowels, tinged with blood, which were passed unconsciously. Calomel powders suspended; one-half oz. of Warburg's tincture was given at 11 o'clock, which at first raised the temperature to 105°, but in a couple of hours induced quite free perspiration, with temperature of 103°.5, which, however, passed off in another two hours, leaving a hot and dry skin. The tongue has been brownish, the intelligence good, with slight disposition to wander this evening. At 6 o'clock temperature was 104°.2; was placed in hot bath, to be gradually cooled, after which 3ij of Warburg's tincture was given. No medicine; continue ice, and barley water given during day. Has been unable to pass any urine during the day. (Fumigated berth deck and ward-room by burning sulphur.)

March 25.—Passed a tolerable night; this morning skin dry, pulse 85, hard, temp. 103°.3; had a liquid passage; tongue dry and little cracked; urine this morning showed traces of albumen. At 10.30 a. m. got a bath and two drachms of Warburg's tincture, which was followed by moderate sweating. At noon temp. 104°.2, pulse 84, stomach quiet; this morning somewhat easier, skin dry, but not so hot; pulse 83, temp. 103°.2; no local pains; has had dry-mustard plasters to epigastrium since yesterday morning; to be sponged off to-night. Ice and barley-water continued; no medicine.

March 26.—Passed a quiet night; is disposed to doze a great deal of the time; complains of no pains; no nausea, but tongue dry, brown, and cracked; pulse 88, temp. 103°.5. Had hot sponge-bath, after which 3ij Warburg's tincture. One hour after receiving above there was slight perspiration and fall of 5° in temp.; mouth washed with glycerine, chlorate potass., and tinct. myrrh. *ad lib.* Bowels moved once during night. At 4 p. m. pulse 92, temp. 104°; no pain, nausea, or symptoms of uneasiness. At 8 p. m. temp. 103°, pulse 83; quiet; skin cool. Ordered powders same as those for Sanders. Continue ice and barley-water.

March 27.—Temp. at midnight 103°.4, pulse 84; tongue very dry; no action of bowels; morning, temp. 104°, pulse 90, not so full. Was placed in a hot bath, which was gradually cooled, after which received 3ij of Warburg's tincture. This was at 1.30 p. m. After receiving the above, was wrapped in blankets, and bottles filled with hot water placed around him. At 2.30 p. m. began to perspire very freely, but the temperature was not decreased thereby. At 4 p. m. temp. 104°.2, pulse 92. Eight p. m., is resting quietly, and seems more comfortable than during the day; tongue moister, skin cooler, and temp. 103°.2, pulse 84. Powders of calomel and Dover's powders every two hours. Passed 3ij of urine this evening.

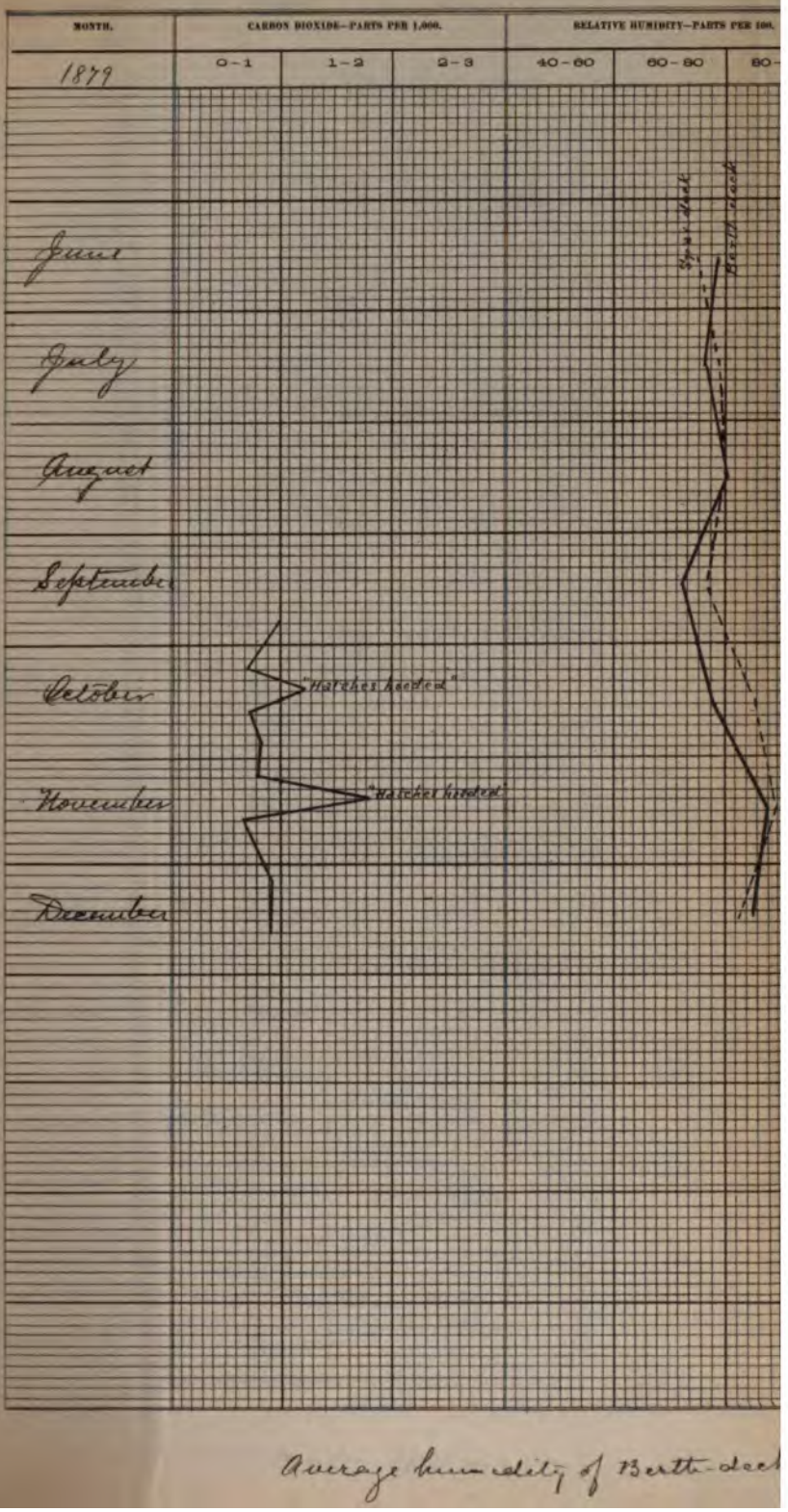
March 28.—Passed rather a restless night, but complained of no pain. Yellow skin developing. Temperature 12 m., 103°.1, pulse 81; 3 a. m., 102°.4, pulse 82; 8 a. m., 103°, pulse 89; 4 p. m., 104°.5, pulse 98; 8 p. m., 103°.4, pulse 92. Passed urine; bowels not moved; skin dry, tongue brownish and very dry; condition becoming typhoid. Gave him this morning quinia gr. x Fowler's solution gtt. ij. Continue powders, and gave weak brandy punch 3ij every two hours. Body to be sponged when necessary.

March 29.—Failing steadily; passed a restless night, delirious, though he answers well when aroused; no action of the bowels; voided urine; tongue dry and brown, skin clammy. Temperature and pulse during 24 hours: 12 m. temp. 103°.4, pulse 84; 3 a. m. temp. 103°.6, pulse 94; 6 a. m. temp. 103°.5, pulse 95°; 8 a. m. temp. 103, pulse 98; 12 m. temp. 103°, pulse 97; 4 p. m. temp. 104°, pulse 104; 8 p. m. temp. 104°.5, pulse 106.

March 30.—Passed a very restless night, moaning and tossing in his cot; slept but little; tongue very dry and brown and is retracted with difficulty; bowels not moved; urine voided twice during night; temperature has ranged from 103°.6 to 104°.4; pulse from 105 to 115. The observations were taken up to 4 p. m., since which time he has been so restless that it has not been possible to make a satisfactory one. Is gradually sinking; takes brandy punch and beef tea every hour.

March 31.—Died of exhaustion at 2.45 p. m.

U. S. S. Washusett



Average humidity of Berth-deck

Vertigo.—Two cases are returned from the Powhatan and two from the Portsmouth; 1 on the Constitution was invalided.

Diseases of the eye.—Fifty-one cases of disease of this organ were reported, constituting 12.3 per M of the force, of which 16, or 3.8 per M, were invalided. The commonest eye affection met on ship-board is conjunctivitis, forming nearly three-fourths of the entire group. The largest number of these troubles occurred on the Minnesota, next on the Portsmouth, and then on the Colorado.

Diseases of the ear.—These affections amounted to 23, or 5.5 per M, of which but 1 was invalided, which was from the Minnesota for otorrhœa.

Diseases of the teeth.—But 12 cases of odontalgia were returned and 1 was invalided, also from the Minnesota.

Diseases of the circulatory system.—This class of disease gave an aggregate of 41 cases, or 9.9 per M of the force; 19, or 4.7 per M were invalided, and 2, or .48 per M, died. These occurred on the Saint Louis and Rio Bravo, respectively. The most common of these diseases are valvular affections, papitation, and hypertrophy, and the *raison d'être* of this frequency is readily appreciated when reference is made to the number of rheumatic affections.

Absorbent system.—Under the single head (adynamia) of this class 40 cases are reported, constituting a ratio of 9.6 per M, of which 17, or 4.1 per M, were invalided. The chief sufferers from this affection were the training-ships Constitution, Minnesota, Portsmouth, and Saratoga.

Respiratory system.—There were of this class 520 cases admitted, a ratio of 125.96 per M, with a loss of service of 3,174 days; 103 cases, or 24.9 per M were invalided. Two deaths occurred, one from pneumonia and one from acute pneumonic phthisis. The largest number of admissions was from catarrh, 232, or 56.22 per M; next, acute bronchitis, which contributed 131 or 31.73 per M. Of pneumonia there were 26 cases, pleuritis 23, and chronic consumption 15. The largest ratio was on the Powhatan, 89 cases, or 21.56 per M, and next on the Minnesota, 78 cases, or 18.89 per M, and on the Colorado, 46 or 11.14 per M.

Phthisis.—A large percentage of the cases of this affection came from the training-ships; 2 from the Constitution, 3 from the Saratoga, 4 from the Portsmouth, and 1 from the Minnesota; showing the tendency to rapid development of a latent tendency to this affection under the influences of the rigorous life on board a ship of war. These affections, as well as pleurisy and pneumonia, occurred chiefly among the new recruits on board the training and receiving ships.

Laryngitis.—An interesting case of this is reported by Surgeon Tryon, from the Vandalia. The man was admitted April 14, with follicular ulcers of the lips and cheek, which extended into the larynx, causing aphonia and dyspnœa. The ulcers soon disappeared under treatment, but the severity of the symptoms continued. No history or trace of syphilis could be found, but with the suspicion that it was of this character, appropriate treatment was followed for some time without relief. The origin was finally decided to be in an an old gunshot-wound of the throat, the cicatrix of which remained, and the exciting cause in exposure to wet and cold incident to the service. During three months of treatment no improvement of the symptoms occurred, and, in addition to those already mentioned, there were frequent attacks resembling hysteria, with globus hystericus, etc., and, finally, a feeling of fullness and numbness about the left side of the face and neck, with dysphagia and twitching of the muscles, but with no symptoms of motor paralysis. June 17, he was transferred to the hospital at Norfolk.

Digestive system.—There was an aggregate of 815 cases of affections of

NORTH ATLANTIC STATION.

TABLE 1.—*Showing the force on each ship, the number admitted and discharged, number of days under treatment, and average per M of force on the North Atlantic Station.*

Vessels.	Strength.	Strength corrected for time.	Admitted.						Discharged.				Continued.	Number of sick days.	Average number of days under treatment.	Daily average number of sick.		Number admitted per M of strength.
			From last year.	First quarter.	Second quarter.	Third quarter.	Fourth quarter.	Total.	Recovered.	Invalided.	Died.	Total.				Absolute.	Per M of strength.	
Tennessee, 2d rate, 2,840 tons, screw; service, 21 days	410	24	....	....	.....	.....	52	52	37	6	....	43	9	223	4.28	0.61	0.14	12.59
Powhatan, 2d rate, 2,182 tons, paddle, wood; service, 365 days	330	330	6	196	54	158	114	528	463	60	....	523	5	4,189	7.93	11.47	2.77	127.90
Plymouth, 2d rate, 1,122 tons, wood, screw; service, 100 days	240	66	4	60	35	.....	.....	99	80	18	1	99	.....	836	8.44	2.29	0.55	23.95
Vandalia, 3d rate, 981 tons, wood, screw; service, 365 days	215	215	11	39	93	51	64	258	210	46	....	256	2	1,675	6.49	4.58	1.11	62.50
Kearsarge, 3d rate, 695 tons, wood, screw; service, 230 days	195	122	....	.....	17	51	56	124	98	21	1	120	4	707	5.70	1.93	0.46	30.04
Nipsic, 3d rate, 695 tons, wood, screw; service, 30 days	186	15	....	....	....	.....	20	20	9	7	....	16	4	106	5.30	0.29	0.07	4.83
Swatara, 3d rate, 910 tons, wood, screw; service, 7 days	213	4	....	....	....	.....	4	4	.....	.....	.....	.....	4	10	2.50	0.02	.....	0.97
Marion, 3d rate, 910 tons, wood, screw; service, 365 days	206	206	9	30	38	40	42	159	108	47	....	155	4	1,568	9.86	4.29	1.03	38.51
Fortune, 4th rate, tug, 306 tons, iron, screw; service, 90 days	32	8	....	9	.....	.....	.....	9	9	.....	.....	9	.....	59	6.55	0.16	0.03	2.18
Supply, 4th rate, 547 tons, wood, sails; service, 107 days	63	18	2	22	3	.....	.....	27	24	3	....	27	.....	312	11.55	0.85	0.20	6.54
Michigan, 4th rate, 450 tons, iron, paddle; service, 365 days	100	100	2	11	11	7	10	41	36	.....	3	39	2	677	16.57	1.85	0.44	9.93
Tallapoosa, 4th rate, 650 tons, wood, paddle; service, 365 days	125	125	....	14	53	25	24	116	105	6	1	112	4	593	5.11	1.62	0.39	28.10
Speedwell, 4th rate, 306 tons, iron, screw, tug; service, 80 days	36	8	....	....	.....	8	.....	8	7	1	....	8	.....	34	4.25	0.09	0.02	1.93
Rio Bravo, 4th rate, 325 tons, wood, paddle; service, 365 days	56	56	1	35	47	39	20	142	137	4	1	142	.....	842	5.92	2.30	0.55	34.37
Constellation, 3d rate, 1,236 tons, wood, sails; service, 172 days	327	154	....	.....	38	69	47	154	139	11	....	150	4	762	4.94	2.08	0.50	37.30
Mayflower, 4th rate, 306 tons, wood, screw, tug; service, 106 days	72	21	....	.....	8	9	.....	17	16	1	....	17	.....	116	6.82	0.31	0.07	4.11

LOCAL DISEASES.													
1.—*Nervous system.*													
Apoplexia	2	0.48	6	0.01	.....	3.00	.....	.....	2	0.48	.....	.....	....
Cephalalgia	44	10.65	137	0.37	0.08	3.11	38	9.19	5	1.21	.....	.....	1
Convulsio	1	0.24	1	.....	.....	1.00	1	0.24	.....	.....	.....	.....	....
Dementia	7	1.69	34	0.09	.....	4.85	2	0.48	5	1.21	.....	.....	....
Epilepsia	23	5.57	140	0.38	0.09	6.08	15	3.63	8	1.93	.....	.....	....
Insolatio	3	0.72	14	0.03	.....	4.66	3	0.72	.....	.....	.....	.....	....
Irritatio spinalis	1	0.24	1	.....	.....	1.00	1	0.24	.....	.....	.....	.....	....
Insomnia	1	0.24	13	0.03	.....	3.00	1	0.24	.....	.....	.....	.....	....
Mania	2	0.48	13	0.03	.....	6.50	.....	.....	2	0.48	.....	.....	....
Melancholia	6	1.45	26	0.07	.....	4.33	2	.48	3	0.72	.....	.....	1
Meningitis	1	0.24	3	.....	.....	3.00	.....	.....	1	0.24	.....	.....	....
Nausea marina	8	1.93	28	0.08	.....	3.50	8	1.93	.....	.....	.....	.....	....
Neuralgia	59	14.29	314	0.86	0.2	5.32	49	11.86	9	2.18	.....	.....	1
Paralysis	5	1.21	22	0.60	0.01	4.50	2	0.48	2	0.48	1	0.24	....
Pleurodynia	7	1.69	29	0.76	0.01	4.14	6	1.45	1	0.24	.....	.....	....
Vertigo	6	1.45	44	0.12	0.02	7.33	2	0.48	4	0.97	.....	.....	....
Aggregate	176	42.63	825	2.26	0.54	4.68	130	31.49	42	10.17	1	0.24	3
2.—*Diseases of the eye.*													
Asthenopia	1	0.24	6	0.01	.....	6.00	.....	.....	1	0.24	.....	.....	....
Cataracta	1	0.24	8	0.02	.....	8.00	.....	.....	1	0.24	.....	.....	....
Conjunctivitis	35	8.47	239	0.65	0.13	6.82	29	7.02	6	1.45	.....	.....	....
Ectropium	1	0.24	7	0.01	.....	7.00	1	0.24	.....	.....	.....	.....	....
Fistula lachrymalis	2	0.48	20	0.05	.....	10.00	.....	.....	1	0.24	.....	.....	1
Hemeralopia	1	0.24	3	.....	.....	3.00	.....	.....	1	0.24	.....	.....	....
Hordeolum	1	0.24	1	.....	.....	1.00	1	0.24	.....	.....	.....	.....	....
Iritis	1	0.24	11	0.03	.....	11.00	1	0.24	.....	.....	.....	.....	....
Keratitis	4	0.97	20	0.05	.....	5.00	.....	.....	4	0.97	.....	.....	....
Ophthalmia	3	0.72	15	0.04	.....	5.00	2	0.48	1	0.24	.....	.....	....
Ophthalmia tarsi	1	0.24	8	0.02	.....	8.00	.....	.....	1	0.24	.....	.....	....
Aggregate	51	12.35	338	.92	.....	6.62	34	8.23	16	3.89	.....	.....	1
3.—*Diseases of the ear.*													
Otalgia	6	1.45	18	0.04	.....	3.00	6	1.45	.....	.....	.....	.....	....
Otitis	7	1.69	68	0.18	0.04	9.75	6	1.45	.....	.....	.....	.....	1
Otorrhœa	5	1.21	31	0.08	.....	6.20	4	0.97	.....	.....	.....	.....	....
Surditas	5	1.21	22	0.06	.....	4.40	4	0.97	1	0.24	.....	.....	1
Aggregate	23	5.57	139	0.38	0.09	6.04	20	4.84	1	0.24	.....	.....	2
4.—*Diseases of the teeth.*													....
Odontalgia	12	2.90	25	0.06	.....	2.08	9	2.18	1	0.24	.....	.....	2
Aggregate	12	2.90	25	0.06	.....	2.08	9	2.18	1	0.24	.....	.....	2

U. S. S. New Hampshire

MONTH.	CARBON DIOXIDE—PARTS PER 1,000.			RELATIVE HUMIDITY—PARTS PER 100.		
1879	0–1	1–2	2–3	40–60	60–80	80–10
January	No record.					
February	"	"				
March	"	"				
April	"	"				
May	"	"				
June	"	"				
July	"	"				
August	"	"				
September	"	"				
October	"	"				
November	"	"				

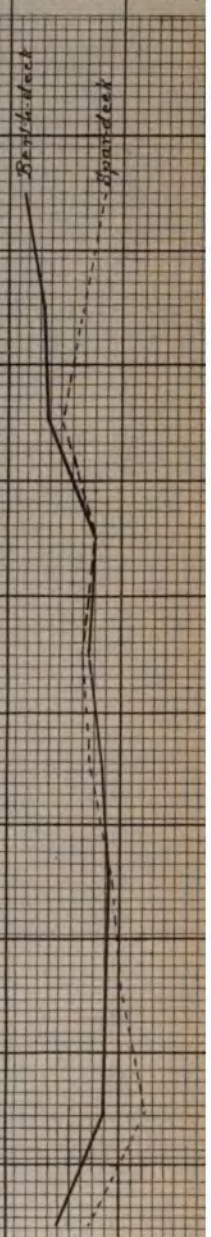


TABLE II.—*Showing the number of cases, the discharged, the invalided, and the dead for each disease, &c.*—Continued.

Diseases and injuries.	Cases.		Number of sick-days.	Average number of men sick daily.		Average number of days under treatment.	Discharged to duty.		Invalided.		Died.		Remaining.
	Number.	Per M of force.		Absolute number.	Ratio per M of force.		Number.	Per M of force.	Number.	Per M of force.	Number.	Per M of force.	
5.—Diseases of the circulatory system.													
Angina pectoris	1	0.24	9	0.02	.....	9.00	1	0.24	.....	.....	.....	.....	....
Hypertrophia cordis	1	0.24	4	0.01	.....	4.00	1	0.24	.....	.....	.....	.....	....
Morbi valvularum cordis	10	2.42	18	0.04	.....	1.80	5	1.21	4	0.96	1	0.24	....
Palpitatio	18	4.35	83	0.22	0.05	4.61	5	1.21	13	3.15	.....	.....	....
Pericarditis	5	1.21	34	0.09	.....	6.80	3	0.72	.....	.....	1	0.24	1
Phlebitis	2	0.48	22	0.06	.....	10.00	2	0.48	.....	.....	.....	.....	....
Varix	4	0.96	19	0.09	.....	4.75	2	0.48	2	0.48	.....	.....	....
Aggregate	41	9.93	189	0.51	.....	4.60	19	4.60	19	4.6	2	0.48	1
6.—Diseases of the absorbent system.													
Adenitis	40	9.69	368	1.00	.....	9.20	21	5.08	17	4.11	.....	.....	2
Aggregate	40	9.69	368	1.00	.....	9.20	21	5.08	17	4.11	.....	.....	2
7.—Diseases of the respiratory system.													
Aphonia	1	0.24	16	0.04	.....	16.00	1	0.24	.....	.....	.....	.....	....
Asthma	8	1.93	38	0.10	0.02	4.75	4	0.97	4	0.97	.....	.....	....
Bronchitis acuta	131	31.73	818	2.23	0.54	6.24	99	23.98	27	6.54	.....	.....	5
Bronchitis chronica	20	4.84	229	0.62	0.15	11.45	13	3.14	7	1.69	.....	.....	....
Catarrhus	261	63.24	1,427	3.93	0.94	5.47	242	58.62	14	3.38	.....	.....	5
Emphseyma	1	0.24	14	0.03	.....	14.00	.....	.....	1	0.24	.....	.....	....
Hæmoptysis	6	1.45	40	0.10	0.02	6.66	3	0.72	3	0.72	.....	.....	....
Laryngitis	24	5.87	61	0.16	0.03	2.54	18	4.36	6	1.45	.....	.....	....
Phtuisis pneumonica acuta	4	0.97	20	0.05	.....	5.00	.....	.....	4	.97	.....	.....	....
Phthisis pneumonica chronica	15	3.63	116	0.31	0.07	7.66	2	0.48	12	2.90	1	0.24	....
Pleuritis	23	5.57	23	0.06	.....	1.00	13	3.14	9	2.18	.....	.....	1
Pneumonia	26	6.30	372	1.01	0.24	14.30	7	1.69	16	3.87	1	0.24	2
Aggregate	520	125.96	3,174	8.69	2.10	6.10	402	97.33	103	24.95	2	0.48	13

Tumors and cysts.													
Cystis	1	0.24	5	0.01	.....	5.00	.....	.....	1	0.24	.....	.....	...
Sarcoma	6	1.45	18	0.04	.....	3.00	4	0.97	1	0.24	.....	.....	1
Aggregate	7	1.69	23	0.06	.....	3.28	4	0.97	2	0.48	.....	.....	1
Violent diseases and deaths.													
Abrasio	44	10.65	339	0.92	0.22	7.70	42	10.17	2	0.48	.....	.....	...
Ambustio	50	12.11	433	1.18	0.28	8.66	45	10.9	4	0.97	.....	.....	1
Concussio cerebri	4	0.97	11	0.03	.....	2.75	4	0.97	.....	.....	.....	.....	...
Contusio	220	53.29	1,589	4.32	1.04	7.22	201	48.69	15	3.63	.....	.....	4
Fractura	32	7.75	517	1.42	0.34	16.15	14	3.39	17	4.11	.....	.....	1
Hernia	24	5.87	203	0.55	0.13	8.45	8	1.93	16	3.87	.....	.....	...
Luxatio	11	2.66	141	0.38	0.09	1.28	8	1.93	3	0.72	.....	.....	...
Trauma	194	46.99	1,224	3.35	0.81	6.30	169	40.93	21	5.08	.....	.....	4
" contusum	94	22.81	696	1.90	0.46	7.40	80	20.83	7	1.69	.....	.....	1
" incisum	84	20.35	559	1.53	0.37	6.65	81	19.62	2	0.48	.....	.....	1
" laceratum	49	11.86	494	1.35	0.32	10.08	46	11.14	2	0.48	.....	.....	1
" punctum	36	8.71	204	0.55	0.13	5.66	31	7.50	5	1.21	.....	.....	...
Aggregate	842	203.97	6,410	17.56	4.25	7.61	735	178.05	94	22.77	.....	.....	13
Grand aggregate	4,175	1,011.38	30,146	82.59	20.00	7.22	3,454	836.72	610	147.77	11	2.66	100

TABLE II.—*Showing the number of cases, the discharged, the invalided, and the dead for each disease, &c.*—Continued.

Diseases and injuries.	Cases.		Number of sick-days.	Average number of men sick daily.		Average number of days under treatment.	Discharged to duty.		Invalided, &c.		Died.		Remaining.
	Number.	Per M of force.		Absolute number.	Ratio per M of force.		Number.	Per M of force.	Number.	Per M of force.	Number.	Per M of force.	
10.—Diseases of the locomotive system.													
Arthritis	1	0.24	14	0.03	.....	14.00	1	0.24	.....	.....	.....	.....	.....
Ankylosis	2	0.48	40	0.10	.....	20.00	1	0.24	1	0.24	.....	.....	.....
Necrosis	1	0.24	2	.....	.....	2.00	.....	.....	.....	.....	.....	.....	1
Periostitis	1	0.24	9	0.02	.....	9.00	1	0.24	.....	.....	.....	.....	.....
Synovitis	14	3.39	146	0.40	.....	10.42	9	2.18	4	0.97	.....	.....	1
Aggregate	19	4.59	211	0.57	0.13	11.10	12	2.90	5	1.21	.....	.....	2
11.—Diseases of the integumentary system.													
Abscessus	93	22.57	1,029	2.81	0.68	11.17	86	20.83	5	1.21	1	0.24	1
Acne	2	0.48	14	0.03	.....	7.00	2	0.48	.....	.....	.....	.....	.....
Anthrax	10	2.42	70	0.19	0.04	7.00	10	2.42	.....	.....	.....	.....	.....
Eczema	14	3.39	65	0.17	0.04	4.35	10	2.42	3	0.72	.....	.....	1
Erythema	7	1.69	18	0.04	.....	2.57	7	1.69	.....	.....	.....	.....	.....
Furunculus	137	33.18	650	1.78	0.43	4.74	129	31.25	3	0.72	.....	.....	5
Herpes	5	1.21	53	0.14	0.03	10.60	3	0.72	2	0.48	.....	.....	.....
Impetigo	1	0.24	5	0.01	.....	5.00	1	0.24	.....	.....	.....	.....	.....
Lichen	1	0.24	4	0.01	.....	4.00	.....	.....	1	0.24	.....	.....	.....
Onychia	3	0.72	54	0.14	0.03	18.00	3	0.72	.....	.....	.....	.....	.....
Paronychia	28	6.78	321	0.87	0.21	11.46	24	5.87	2	0.48	.....	.....	2
Pernio	10	2.42	77	0.31	0.05	7.70	10	2.42	.....	.....	.....	.....	.....
Scabies	1	0.24	29	0.07	.....	29.00	.....	.....	1	0.24	.....	.....	.....
Unguis involutis	6	1.45	39	0.10	0.02	6.50	6	1.45	.....	.....	.....	.....	.....
Ulcus	43	10.41	424	1.16	0.28	9.80	38	9.19	2	0.48	.....	.....	3
Urticaria	1	0.24	1	.....	.....	1.00	.....	.....	1	0.24	.....	.....	.....
Verrucæ	1	0.24	17	0.04	.....	17.00	.....	.....	1	0.24	.....	.....	.....
Aggregate	363	87.93	2,870	7.86	1.90	7.90	329	79.69	21	5.09	1	0.24	12
Poisons.													
Ebriositas	59	14.29	176	0.48	0.11	2.98	55	13.32	2	0.48	.....	.....	2
Alcoholismus	26	6.30	53	0.14	0.03	2.03	23	5.57	2	0.48	.....	.....	1
Aggregate	85	20.59	229	0.62	0.15	2.69	78	18.89	4	0.97	.....	.....	3

LOCAL DISEASES.																										
1.—Nervous system.																										
Apoplexia																										
Cephalalgia				3						2			4	1									2	1		
Convulsio																										
Dementia	1	1		2	1					2	1															
Epilepsia	1			4	1		1	1		1						1	1						2	1		
Insolatio																										
Irritatio spinalis													1	1												
Insomnia				1																						
Mania																							1	1		
Melancholia				1						1																
Meningitis																										
Nausea marina																										
Neuralgia	1			9			3	2		4	2		2										3	1		
Paralysis				3									1		1											
Pleurodynia																										
Vertigo				2	2								1	1												
Aggregate	3	1		25	4		4	3		10	3		17	3	1	1	1						8	4		
Ratio per M	0.72	0.24		6.11	0.97		0.97	0.72		2.42	0.72		4.11	0.72	0.24	0.24	0.24						1.93	0.97		
Diseases of the eye.																										
Asthenopia																										
Cataracta																										
Conjunctivitis				5						2			1	1									3			
Ectropium																										
Fistula lachrymalis																										
Hemeralopia																							1	1		
Hordeolum																										
Iritis																										
Keratitis													1	1												
Ophthalmia																										
Ophthalmia tarsi																										
Aggregate				5						2			2	2									4	1		
Ratio per M				1.21						0.48			0.48	0.48									0.97	0.48		
Diseases of the ear.																										
Otalgia				1						2																
Otitis										3																
Otorrhœa				2																						
Surditas				2																			1			
Aggregate				5						5													1			
Ratio per M				1.21						1.21													0.24			

TABLE III.—*Showing the number of cases, the invalided and dead, for each disease on each vessel on the North Atlantic Station.*

Diseases and injuries.	Tennessee.			Powhatan.			Plymouth.			Vandalia.			Kearsarge.			Nipsic.			Swatara.			Marion.		
	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.
GENERAL DISEASES.																								
1.—*Zymotic diseases.*																								
Catarrhus epidemicus	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Cynanche parotidea	.....	.....	....	7	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Diphtheria	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Erysipelas	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	3	.....	....
Febricula	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	1	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Febris continua simplex	.....	.....	....	9	1	....	4	.....	....	7	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	4	1	....
Febris enterica	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Febris flava	.....	.....	....	.....	.....	....	1	.....	1	.....	.....	....	1	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Febris intermittens	2	.....	....	26	.....	....	2	.....	....	23	2	....	.....	.....	....	.....	.....	....	.....	.....	....	8	2	....
Febris remittens	.....	.....	....	.....	.....	....	.....	.....	....	6	2	....	.....	.....	....	1	.....	....	.....	.....	....	.....	.....	....
Febris typhus	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Morbilli	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Scarlatina	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Vaccinia	.....	.....	....	.....	.....	....	1	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Aggregate	2	.....	....	42	1	....	8	.....	1	36	4	....	2	.....	....	1	.....	....	.....	.....	....	15	3	....
Ratio per M	0.48	.....	....	10.17	0.24	....	1.93	.....	0.24	8.71	0.97	....	0.48	.....	....	0.24	.....	....	.....	.....	....	3.62	0.72	....
Constitutional diseases.																								
Adynamia	.....	.....	....	8	1	....	2	1	....	13	4	....	3	1	....	.....	.....	....	.....	.....	....	.....	.....	....
Anæmia	.....	.....	....	1	1	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Hydrops	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	1	1	....	.....	.....	....	.....	.....	....
Podagra	.....	.....	....	1	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Lumbago	.....	.....	....	1	.....	....	.....	.....	....	.....	.....	....	2	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Rheumatismus chronicus	1	1	....	16	6	....	.....	.....	....	4	4	....	3	3	....	.....	.....	....	.....	.....	....	9	4	....
Rheumatismus acutus	2	.....	....	5	1	....	10	4	....	15	1	....	5	.....	....	.....	.....	....	1	.....	....	1	.....	....
Rheumatismus subacutus	1	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Syphilis primitiva	1	1	....	9	4	....	3	2	....	5	1	....	2	1	....	1	.....	....	.....	.....	....	9	2	....
Syphilis consecutiva	.....	.....	....	11	3	....	1	.....	....	5	3	....	1	1	....	.....	.....	....	.....	.....	....	9	2	....
Senectus	.....	.....	....	1	1	....	.....	.....	....	2	2	....	.....	.....	....	.....	.....	....	.....	.....	....	1	1	....
Aggregate	5	2	....	53	17	....	16	7	....	44	15	....	16	6	....	2	1	....	1	.....	....	29	9	....
Ratio per M	1.21	0.48	....	12.83	4.11	....	.....	1.69	....	10.66	3.63	....	3.87	1.44	....	0.48	0.24	....	0.48	.....	....	7.02	2.18	....

Emphysema										1	1													
Hæmoptysis										1	1													
Laryngitis										2	1											1	1	
Phthisis pneumonica acuta																								
Phthisis pneumonica chronica																						1	1	
Pleuritis																						2	1	
Pneumonia	1	1		3	3		1	1		2	1		2	2		1	1						1	1	
Aggregate	17	1		89	14		34	3		22	6		18	3		4	1						15	8	
Ratio per M.	4.11	0.24		21.56	3.33		8.29	0.72		5.33	1.45		4.36	0.72		0.97	0.24						3.63	1.93	
Diseases of the digestive system.																								
Ascites										1	1													
Cholera morbus				9						2														
Cirrhosis hepatis										1	1													
Colica				3						2			14									1		
Congestio hepatis																								
Constipatio				2						1			1											
Diarrhœa acuta				50	1					17			7	1		2						4		
Diarrhœa chronica				1																				
Dysenteria acuta				1						4	2											3	1	
Dysenteria chronica																								
Dyspepsia				1	1					8			1	1								2		
Enteritis																						3	1	
Fistula in ano	1									1	1													
Gastritis				1																		1	1	
Gastrodynia																								
Hæmatemesis				2																				
Hæmorrhois				5			2			2												3	1	
Hepatitis acuta																								
Hepatitis chronica				2																				
Icterus										2			1											
Pharyngitis				13						2														
Proctitis																								
Splenitis																								
Stomatitis							1																	
Tonsillitis	4			40	1		6			1			8									1		
Vermes				1						1			1							1				
Aggregate	5			125	3		9			45	5		33	2		2				1		18	4	
Ratio per M.	1.21			30.27	0.72		2.18			10.90	1.21		7.99	0.48		0.48				0.24		4.35	0.97	
Diseases of the genito-urinary system.																								
Albuminuria																								
Balanitis																								
Chancroid	1			6	3															1				
Cystitis				2									1									1	1	
Descensus calculi per ureteres																								
Enuresis	1	1																						

TABLE III.—*Showing the number of cases, the invalided and dead, for each disease on each vessel, &c.*—Continued.

Diseases and injuries.	Tennessee.			Powhatan.			Plymouth.			Vandalia.			Kearsarge.			Nipsic.			Swatara.			Marion.		
	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.
LOCAL DISEASES—Continued.																								
Diseases of the genito-urinary system—Continued.																								
Gonorrhœa	3			24	2					2			2			1						7		
Hæmaturia				1	1																			
Hydrocele																								
Ischuria																								
Nephritis																1	1							
Orchitis				2			2	1		6	1					1								
Paraphymosis				1																				
Phymosis																								
Prostatitis																								
Spermatorrhœa																								
Urethræ strictura				5	5		1	1		2	1											1	1	
Varicocele										2	1													
Aggregate	5	1		41	11		3	2		12	3		3			3	1		1			9	2	
Ratio per M.	1.21	0.20		9.93	2.66		0.72	0.48		2.90	0.72		0.72			0.72	0.24		0.24			2.18	0.48	
Diseases of the locomotive system.																								
Arthritis																								
Ankylosis	1	1																						
Necrosis																1								
Periostitis																								
Synovitis										2	1													
Aggregate	1	1								2	1					1								
Ratio per M.	0.24	0.24								0.48	0.24					0.24								
Diseases of the integumentary system.																								
Abscessus				3	1		2	1		14	2		3	1								3		
Acne																								
Anthrax				2						2														
Eczema	1									1														
Erythema																								
Furunculus	1			4			2			15			5									6		

Pneumonia	1	1	....	3	3	....	1	1	....	2	1	....	2	2	...	1	1	....	.....	.....	....	1	1	....
Aggregate	17	1	....	89	14	....	34	3	....	22	6	....	18	3	...	4	1	....	.....	.....	....	15	8	....
Ratio per M.	4.11	0.24	...	21.56	3.33	....	8.29	0.72	....	5.33	1.45	...	4.36	0.72	...	0.97	0.24	....	.....	.....	....	3.63	1.93	....
Diseases of the digestive system.																								
Ascites	.....	.....	....	.....	.....	....	.....	.....	....	1	1	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Cholera morbus	.....	.....	....	9	.....	....	.....	.....	....	2	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Cirrhosis hepatis	.....	.....	....	.....	.....	....	.....	.....	....	1	1	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Colica	.....	.....	....	3	.....	....	.....	.....	....	2	.....	....	14	.....	....	.....	.....	....	.....	.....	....	1	.....	....
Congestio hepatis	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Constipatio	.....	.....	....	2	.....	....	.....	.....	....	1	.....	....	1	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Diarrhœa acuta	...	.....	....	50	1	....	.....	.....	....	17	.....	....	7	1	....	2	.....	....	.....	.....	....	4	.....	....
Diarrhœa chronica	.....	.....	....	1	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Dysenteria acuta	.....	.....	....	1	.....	....	.....	.....	....	4	2	....	.....	.....	....	.....	.....	....	.....	.....	....	3	1	....
Dysenteria chronica	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Dyspepsia	.....	.....	....	1	1	....	.....	.....	....	8	.....	....	1	1	....	.....	.....	....	.....	.....	....	2	.....	...
Enteritis	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	3	1	....
Fistula in ano	1	.....	....	.....	.....	....	.....	.....	....	1	1	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Gastritis	.....	.....	....	1	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	1	1	....
Gastrodynia	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Hæmatemesis	.....	.....	....	2	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Hæmorrhois	.....	.....	....	5	.....	....	2	.....	....	2	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	3	1	....
Hepatitis acuta	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Hepatitis chronica	.....	.....	....	2	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Icterus	.....	.....	....	.....	.....	....	.....	.....	....	2	.....	....	1	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Pharyngitis	.....	.....	....	13	.....	....	.....	.....	....	2	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Proctitis	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Splenitis	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Stomatitis	.....	.....	....	.....	.....	....	1	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Tonsillitis	4	.....	....	40	1	....	6	.....	....	1	.....	....	8	.....	....	.....	.....	....	.....	.....	....	1	.....	....
Vermes	.....	.....	....	1	.....	....	.....	.....	....	1	.....	....	1	.....	....	.....	.....	....	1	.....	....	.....	.....	....
Aggregate	5	.....	....	125	3	....	9	.....	....	45	5	....	33	2	....	2	.....	....	1	.....	....	18	4	....
Ratio per M.	1.21	.....	....	30.27	0.72	....	2.18	.....	....	10.90	1.21	....	7.99	0.48	....	0.48	.....	....	0.24	.....	....	4.35	0.97	....
Diseases of the genito-urinary system.																								
Albuminuria	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Balanitis	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Chancroid	1	.....	....	6	3	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	1	.....	....	.....	.....	....
Cystitis	.....	.....	....	2	.....	....	.....	.....	....	.....	.....	....	1	.....	....	.....	.....	....	.....	.....	....	1	1	....
Descensus calculi per ureteres	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....
Enuresis	1	1	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....	.....	.....	....

TABLE III.—*Showing the number of cases, the invalided and dead, for each disease on each vessel, &c.*—Continued.

Diseases and injuries.	Tennessee.			Powhatan.			Plymouth.			Vandalia.			Kearsarge.			Nipsic.			Swatara.			Marion.		
	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.
LOCAL DISEASES—Continued.																								
Diseases of the genito-urinary system—Continued.																								
Gonorrhœa	3			24	2					2			2			1						7		
Hæmaturia				1	1																			
Hydrocele																								
Ischuria																								
Nephritis																1	1							
Orchitis				2			2	1		6	1					1								
Peraphymosis				1																				
Phymosis																								
Prostatitis																								
Spermatorrhœa																								
Urethræ stricture				5	5		1	1		2	1											1	1	
Varicocele										2	1													
Aggregate	5	1		41	11		3	2		12	3		3			3	1		1			9	2	
Ratio per M	1.21	0.20		9.93	2.66		0.72	0.48		2.90	0.72		0.72			0.72	0.24		0.24			2.18	0.48	
Diseases of the locomotive system.																								
Arthritis																								
Ankylosis	1	1																						
Necrosis																1								
Periostitis																								
Synovitis										2	1													
Aggregate	1	1								2	1					1								
Ratio per M	0.24	0.24								0.48	0.24					0.24								
Diseases of the integumentary system.																								
Abscessus				3	1		2	1		14	2		3	1								3		
Acne				2						2														
Anthrax	1									1														
Eczema				4			2			15			3									6		
Erythema	1																							
Furunculus																								

| LOCAL DISEASES. | | |

TABLE III.—*Showing the number of cases, the invalided and dead, for each disease on each vessel, &c.*—Continued.

Diseases and injuries.	Fortune.			Supply.			Michigan.			Tallapoosa.			Speedwell.			Rio Bravo.			Constellation.			May Flower.		
	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.
LOCAL DISEASES—Continued.																								
6.—*Diseases of the teeth.*																								
Odontalgia										1						5			1					
Aggregate										1						5			1					
Ratio per M										0. 24						1. 21			0. 24					
7.—*Diseases of the circulatory system.*																								
Angina pectoris																								
Hypertrophia cordis																								
Morbi valvularum cardis																								
Palpitatio																								
Pericarditis																1		1						
Phlebitis																								
Varix																								
Aggregate																1		1						
Ratio per M																0 24		0. 24						
8.—*Diseases of the absorbent system.*																								
Adenitis																								
Aggregate																								
Ratio per thousand																								
9.—*Diseases of the respiratory organs.*																								
Apnœa																								
Asthma																								
Bronchitis acuta							2			2						7	1		4					
Bronchitis chronica																1			1					
Catarrhus							4			15						14								
Catarrhus bronchialis																								
Emphysema																								
Hæmoptysis																								

Phthisis pneumonica acuta															4									
Phthisis pneumonica chronica																								
Pleuritis						1		1										1						
Pneumonia				1	1	1																		
Aggregate				1	1	8		1	17						26	1		6						
Ratio per M.				0.24	0.24	1.93		0.24	4.11						6.30	0.24		1.45						
Diseases of the digestive system.																								
...se																								
...ra morbus									4									1						
...osis hepatis																								
...ea															7							3		
...igestio hepatis																								
...onstipatio															3			1						
Diarrhœa acuta						1			29		1				8			21	1		4			
Diarrhœa chronica																								
Dysenteria acuta						1																		
Dysenteria chronica																								
Dyspepsia						1			1						1			2						
Enteritis				1																				
Fistula in ano																								
Gastritis									1									3						
Gastrodynia																								
Hæmatemesis																								
Hæmorrhois															1									
Hepatitis acuta						1		1																
Hepatitis chronica				1																				
Icterus																								
Pharyngitis	2																							
Proctitis																								
Splenitis																								
Stomatitis																								
Tonsillitis						3			4															
Vermes									2															
Aggregate	2			2		7		1	41		1				20			28	1		7			
Ratio per M.	0.48			0.48		1.69		0.24	9.93		0.24				4.84			6.78			1.69			
11.—*Diseases of the genito-urinary system.*																								
Albuminuria																								
Balanitis	1																							
Chancroid																								
Cystitis																		1						
Descensus calculi per ureteres																								
Enuresis																								
Gonorrhœa	1								1						3	1		5						

TABLE III.—*Showing the number of cases, the invalided and dead, for each disease on each vessel, &c.*—Continued.

Diseases and injuries.	Fortune.			Supply.			Michigan.			Tallapoosa.			Speedwell.			Rio Bravo.			Constellation.			May Flower.		
	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.
LOCAL DISEASES—Continued.																								
6.—*Diseases of the teeth.*																								
Odontalgia										1						5			1					
Aggregate										1						5			1					
Ratio per M										0. 24						1. 21			0. 24					
7.—*Diseases of the circulatory system.*																								
Angina pectoris																								
Hypertrophia cordis																								
Morbi valvularum cardis																								
Palpitatio																								
Pericardlitis																1		1						
Phlebitis																								
Varix																								
Aggregate																1		1						
Ratio per M																0 24		0. 24						
8.—*Diseases of the absorbent system.*																								
Adenitis																								
Aggregate																								
Ratio per thousand																								
9.—*Diseases of the respiratory organs.*																								
Apnœa																								
Asthma																								
Bronchitis acuta							2			2						7	1		4					
Bronchitis chronica																1			1					
Catarrhus							4			15						14								
Catarrhus bronchialis																								
Emphysema																								
Hæmoptysis																								

Aggregate				1	1		8		1	17						26	1		6					
Ratio per M.				0.24	0.24		1.93		0.24	4.11						6.30	0.24		1.45					
10.—*Diseases of the digestive system.*																								
Ascites																								
Cholera morbus										4									1					
Cirrhosis hepatis																								
Colica																7						3		
Congestio hepatis																								
Constipatio																3			1					
Diarrhœa acuta							1			29		1				8			21	1		4		
Diarrhœa chronica																								
Dysenteria acuta							1																	
Dysenteria chronica																								
Dyspepsia							1			1						1			2					
Enteritis				1																				
Fistula in ano																								
Gastritis										1									3					
Gastrodynia																								
Hæmatemesis																								
Hæmorrhois																1								
Hepatitis acuta							1		1															
Hepatitis chronica				1																				
Icterus																								
Pharyngitis	2																							
Proctitis																								
Splenitis																								
Stomatitis																								
Tonsillitis							3			4														
Vermes										2														
Aggregate	2			2			7		1	41		1				20			28	1		7		
Ratio per M.	0.48			0 48			1.69		0.24	9.93		0.24				4.84			6.78			1.69		
11.—*Diseases of the genito-urinary system.*																								
Albuminuria																								
Balanitis	1																							
Chancroid																								
Cystitis																			1					
Descensus calculi per ureteres																								
Enuresis																								
Gonorrhœa	1									1						3	1		5					

TABLE III.—*Showing the number of cases, the invalided and dead, for each disease on each vessel, &c.*—Continued.

Diseases and injuries.	Fortune.			Supply.			Michigan.			Tallapoosa.			Speedwell.			Rio Bravo.			Constellation.			Mayflower.		
	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.
LOCAL DISEASES—Continued.																								
11.—*Diseases of the genito-urinary system*—Continued.																								
Hæmaturia																								
Hydrocele																								
Ischuria																								
Nephritis																								
Orchitis				2															4					
Paraphymosis																								
Phymosis																								
Prostatitis																			1					
Spermatorrhœa										2	1													
Urethræ strictura													1											
Varicocele																								
Aggregate	2			2						3	1		1			3	1		11					
Ratio per M.	0.48			0.48						0 72	0.24		0.24			0.72	0.24		2.66					
12.—*Diseases of the locomotive system.*																								
Arthritis																								
Ankylosis																								
Necrosis																								
Periostitis																								
Synovitis																								
Aggregate																								
Ratio per M.																								
13.—*Diseases of the integumentary system.*																								
Abscesses				1									1			4								
Acne																			1					
Anthrax													1											
Eczema																			1					
Erythema																								
Furunculus										3						2			6					

Lichen																								
Onychia																								
Paronychia	1								1									4						
Pernio																								
Scabies																								
Unguis involutis															1									
Ulcus									3															
Urticaria																								
Verrucæ																								
Aggregate				1					7			2			9			15						
Ratio per M				0.24					1.69			0.48			2.18			3.63						
14.—*Poisons.*																								
Alcoholismus				5	1				2						6									
Ebriositas															1									
Aggregate				5	1				2						7									
Ratio per M				1.21	0.24				0.48						1.69									
15.—*Tumors and cysts.*																								
Cystis																								
Sarcoma																		1						
Aggregate																		1						
Ratio per M																		0.24						
16.—*Violent diseases and deaths.*																								
Abrasio									2						8			1	1		1			
Ambustio				1					3						2						1	1		
Concussio cerebri																								
Contusio	2			1		3			3			1			8			18	1		2			
Fractura									3															
Hernia									1	1					2									
Luxatio									1									1						
Stremma	1											1	1		4			7			2			
Vulnus contusum									5						5			8						
Vulnus incisum									1						1			7						
Vulnus laceratum				1		1									6			1						
Vulnus punctum									5			1			1			1						
Aggregate	3			3		4			24	1		3			37			44	2		6	1		
Ratio per M	0.72			0.72		0.97			5.87	0.24		0.72			8.95			10.65	0.48		1.45	0.24		

TABLE III.—*Showing the number of cases, the invalided, and dead, for each disease on each vessel, &c.*—Continued.

Diseases and injuries.	Standish.			Minnesota.			Constitution.			Saratoga.			Portsmouth.			Wachusett.			Shenandoah.			Wabash.		
	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.
GENERAL DISEASES.																								
1.—*Zymotic diseases.*																								
Catarrhus epidemicus	.....	.....	...	.....	.....	...	2	.....	...	1	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Cynanche parotidea	.....	.....	...	.....	.....	...	.....	.....	...	1	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Diphtheria	.....	.....	...	.....	.....	...	.....	.....	...	1	1	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Erysipelas	.....	.....	...	.....	.....	...	.....	.....	...	1	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Febricula	.....	.....	...	6	.....	...	.....	.....	...	.....	.....	...	1	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Febris continua simplex	.....	.....	...	2	.....	...	2	.....	...	.....	.....	...	2	.....	...	2	.....	...	1	.....	...	1	.....	...
Febris enterica	.....	.....	...	.....	.....	...	.....	.....	...	1	1	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Febris flava	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Febris intermittens	2	.....	...	11	1	...	11	2	...	11	1	...	59	3	...	1	.....	...	1	.....	...	3	1	...
Febris remittens	.....	.....	...	1	.....	...	3	.....	1	.....	.....	...	3	1	...	1	.....	...	.....	.....	...	.....	.....	...
Febris typhus	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	1	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Morbilli	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	6	3	...	.....	.....	...	.....	.....	...	.....	.....	...
Scarlatina	.....	.....	...	1	1	..	.....	.....	...	.....	.....	...	1	1	...	.....	.....	...	.....	.....	...	.....	.....	...
Vaccinia	1	.....	...	.....	.....	...	31	.....	..	.....	.....	...	1	.....	...	1	.....	...	.....	.....	...	1	.....	...
Aggregate	3	.....	...	21	2	...	49	2	1	15	3	...	74	8	...	5	.....	...	2	.....	...	5	1	...
Ratio per M	.72	.....	...	5.08	0.48	...	11.86	0.48	.24	3.63	0.72	...	17.93	1.93	...	1.21	.....	...	0.48	.....	...	1.21	0.24	...
2.— *Constitutional diseases.*																								
Adynamia	.....	.....	...	7	4	...	4	3	...	.....	.....	...	.....	.....	...	4	1	...	1	1	...	2	.....	...
Anæmia	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Hydrops	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Podagra	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Lumbago	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Rheumatismus chronicus	.....	.....	...	6	2	...	7	5	...	1	.....	...	4	3	...	1	1	...	.....	.....	...	4	1	...
Rheumatismus acutus	.....	.....	...	20	4	...	.....	.....	...	3	1	...	7	1	...	1	1	...	1	.....	...	5	2	...
Rheumatismus subacutus	.....	.....	...	9	4	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Syphilis primitiva	.....	.....	...	7	4	...	7	3	...	10	1	...	.....	.....	...	.....	.....	...	.....	.....	...	1	.....	...
Syphilis consecutiva	.....	.....	...	2	.....	...	8	5	...	1	.....	...	3	.....	...	2	2	...	2	1	...	.....	.....	...
Senectus	.....	.....	...	.....	.....	...	1	1	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...	.....	.....	...
Aggregate	.....	.....	...	51	18	...	27	17	...	15	2	...	14	4	...	8	5	...	4	2	...	12	3	...
Ratio per M	.....	.....	...	12.35	4.36	...	6.54	4.11	...	3.62	0.48	...	3.38	0.48	...	1.93	1.21	...	0.97	0.48	...	2.90	0.72	...

LOCAL DISEASES.																							
3.—Diseases of the nervous system.																							
Apoplexia																							
Cephalalgia				1			4						6			3						1	
Convulsio													1										
Dementia																			1	1			
Epilepsia				5	2								5	2		1						1	
Insolatio				2									1										
Irritatio spinalis																							
Insomnia																							
Mania																							
Melancholia				1	1								2	1									
Meningitis							1	1															
Nausea marina																							
Neuralgia				4	1		1			1			6			4						1	
Paralysis																							
Pleurodynia				5																			
Vertigo							1	1					2										
Aggregate				18	4		7	2		1			23	3		8	1		1	1		3		
Ratio per M				4.36	0.97		1.69	0.48		0.24			5.57	0.72		1.93	0.24		0.24	0.24		0.72		
4.—Diseases of the eye.																							
Asthenopia							1	1															
Cataracta										1	1												
Conjunctivitis				6						3	2		5									2	
Ectropium													1										
Fistula lachrymalis							2	1															
Hemeralopia																							
Hordeolum																							
Iritis																							
Keratitis				3	3																		
Ophthalmia				1									1										
Ophthalmia tarsi													1	1									
Aggregate				10	3		3	2		4	3		8	1								2	
Ratio per M				2.42	0.72		0.72	0.48		0.97	0.72		1.93	0.24								0.48	
5.—Diseases of the ear.																							
Otalgia													1			1			1				
Otitis							1						1										
Otorrhœa				3	1																		
Surditas																							
Aggregate				3	1		1						2			1			1				
Ratio per M				0.72	0.24		0.24						0.48			0.24			0.24				

TABLE III.—*Showing the number of cases, the invalided, and dead, for each disease on each vessel, &c.*—Continued.

Diseases and injuries.	Standish.			Minnesota.			Constitution.			Saratoga.			Portsmouth.			Wachusett.			Shenandoah.			Wabash.		
	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.
LOCAL DISEASES—Continued.																								
6.—Diseases of the teeth.																								
Odontalgia													2						1					
Aggregate													2						1					
Ratio per M													0.48						0 24					
7.—Diseases of the circulatory system.																								
Angina pectoris				1																				
Hypertrophia cordis										1														
Morbi valvularum cordis							2	2		3	1		1			1	1							
Palpitatio							2	2					4	1					5	5				
Pericarditis										3														
Phlebitis																								
Varix													1	1										
Aggregate				1			4	4		7	1		6	2		1	1		5					
Ratio per M				0.24			0.97	0.97		1.69	0.24		1.45	0.48		0.24	0.24		1.21					
8.—Diseases of the absorbent system.																								
Adenitis				5	1		10	4		2			3	2		1	1							
Aggregate				5	1		10	4		2			3	2		1	1							
Ratio per M				1.21	0.24		2.42	0.97		0.48			0.72	0.48		0.24	0.24							
Diseases of the respiratory organs.																								
Apnœa				1																				
Asthma							1												1	1				
Bronchitis acuta				7			5			13	3		17	2								8	2	
Bronchitis chronica																								
Catarrhus				34	3		4									6			2					
Catarrhus bronchialis				28	6																			
Emphysema																								

Hæmoptysis										1	1																	1							
Laryngitis				6			1					1	1		5																			
Phthisis pneumonica acuta															2	2																		
Phthisis pneumonica chronica				1	1		2	2		3	3				2	2												2	1				
Pleuritis							4			2	1				5	1		1	1		2	1											
Pneumonia				1	1		2								1	1					1								2				
Aggregate				78	11		20	3		19	8		32	8		7	1		6	2		12	5											
Ratio per M				18.89	2.66		4.84	0.72		4.60	1.93		7.75	1.93		1.69	0.24		1.45	0.48		3.15	1.21											
Diseases of the digestive system.																																		
Ascites																																		
Cholera morbus				48			2	1		2						1																		
Cirrhosis hepatis																																		
Colica				5			2						12			1						5											
Congestio hepatis																1																		
Constipatio							1						4			2																		
Diarrhœa acuta	2			38	6		8	1		4			23			2			1			3											
Diarrhœa chronica																						1	1											
Dysenteria acuta				1	1		1			9	1											1												
Dysenteria chronica																																		
Dyspepsia				1									3			1																		
Enteritis																																		
Fistula in ano							1	1					1																					
Gastritis							1						2																					
Gastrodynia																																		
Hæmatemesis							1	1																										
Hæmorrhois				10	2		1						4						1															
Hepatitis acuta																																		
Hepatitis chronica																																		
Icterus																																		
Pharyngitis				42						1			3									2												
Proctitis																																		
Splenitis																						2												
Stomatitis													1																					
Tonsillitis				77	1		16	1		5			4			3						9												
Vermes																																		
Aggregate	2			212	10		34	5		21	1		57			11			2			23	1											
Ratio per M	.98			51.36	2.42		8.23	1.21		5.08	0.24		13.80			2.66			0.48			5.57	0.24											
Diseases of the genito-urinary system.																																		
Albuminuria				1	1																													
Balanitis																																		
Chancroid							1	1																										
Cystitis				1			1																											
Descensus calculi per ureteres																																		
Enuresis				1	1		2	2		1	1		1																					

TABLE III.—*Showing the number of cases, the invalided and dead, for each disease on each vessel, &c.*—Continued.

Diseases and injuries.	Standish.			Minnesota.			Constitution.			Saratoga.			Portsmouth			Wachusett.			Shenandoah.			Wabash.		
	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.
LOCAL DISEASES—Continued.																								
Diseases of the genito-urinary system—Continued.																								
Gonorrhœa				15	3		6	2					5	1		5						5		
Hæmaturia																						1	1	
Hydrocele																								
Ischuria																								
Nephritis										1														
Orchitis					1		1			2			4									3	1	
Paraphymosis																								
Phymosis																								
Prostatitis																								
Spermatorrhœa																								
Urethræ strictura				1	1		1			1						3	3					1	1	
Varicocele							1	1																
Aggregate				25	7		13	6		5	1		10	1		8	3					10	3	
Ratio per M				6.11	1.69		3.15	1.45		1.21	0.24		2.42	0.24		1.93	0.72					2.42	0.72	
Diseases of the locomotive system.																								
Arthritis				1																				
Ankylosis																						1		
Necrosis																								
Periostitis																								
Synovitis							6	1					1											
Aggregate				1			6	1					1									1		
Ratio per M				0.24			1.45	0.24					0.24									0.24		
Diseases of the integumentary system.																								
Abscessus																								
Acne				23	1		4			5			6			4						3		
Anthrax							2															3		
Eczema				2									1			1								
Erythema																								
Furunculus																								

Herpes				15			12	1					26			3						2			
Impetigo							1						1	1											
Lichen							1																		
Onychia																									
Paronychia																									
Pernio				4			6	1		2						2									
Scabies							1			2															
Unguis involutis																									
Ulcus										1															
Urticaria				13	1		5	1		1	1		1									3			
Verrucæ																									
Aggregate				60	2		32	3		11	1		38	1		10						10			
Ratio per M				14.53	0.48		7.75	0.72		2.66	0.24		9.19	0.24		2.42						2.42			
Poisons.																									
Alcoholismus				14			5	1					5									1			
Ebriositas																1						1			
Aggregate				14			5	1					5			1						2			
Ratio per M				3.39			1.21	0.24					1.21			0 24						0 48			
Tumors and cysts.																									
Cystis																									
Sarcoma																						1			
Aggregate																						1			
Ratio per M																						0 24			
Violent diseases and deaths.																									
Abrasio				3	1		3			1			7			1									
Ambustio				6			3			1			7	1								2	1		
Concussio cerebri							1						1									1			
Contusio				34	1		20	2		5			15	1		4			2	2		6			
Fractura				4	1		3	3		5	1		2	1		1						2			
Hernia							1	1		5	2					3	2		1	1		1			
Luxatio				3	1		2	2		1						1									
Stremma	1			34	2		8	1		11	3		17	1		3			2			3	1		
Vulnus contusum				14	1		4			4	1		10			1			6	1		1			
Vulnus incisum				12			7			2			12	1		1			3			3			
Vulnus laceratum	1			7			4			3			2			1	1		1						
Vulnus punctum				5			4	1		2	1		3			2									
Aggregate	2			122	7		60	10		40	8		76	5		18	3		15	4		19	2		
Ratio per M	0.48			29.56	1.69		14.53	2.42		9.69	1.93		18.41	1.21		4.36	0.72		3.63	0.48		4.60	0.48		

TABLE III.—*Showing the number of cases, the invalided and dead, for each disease on each vessel, &c.*—Continued.

Diseases and injuries.	Colorado.			Franklin.			Saint Louis.			New Hampshire.			Passaic.			Wyandotte.			Montauk.			Manhattan.		
	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.
GENERAL DISEASES.																								
1.—*Zymotic diseases.*																								
Catarrhus epidemicus										9														
Cynanche parotidea										19														
Diphtheria																								
Erysipelas	1	1																						
Febricula																								
Febris continua simplex	1			4																				
Febris enterica																								
Febris flava																								
Febris intermittens	10	5		15			23	1		2			1			2						3		
Febris remittens	9	3		11	2		1			1												1		
Febris typhus																								
Morbilli										4														
Scarlatina																								
Vaccinia																								
Aggregate	21	9		30	2		24	1		35			1			2						4		
Ratio per M	5.08	2.18		7.26	0.48					8.47			0.24			0.48						0.97		
CONSTITUTIONAL DISEASES.																								
Adynamia				1	1		1			2			1											
Anæmia																								
Hydrops																								
Podagra							2																	
Lumbago																								
Rheumatismus chronicus	13	8		5	1		1			5	2		1	1										
Rheumatismus acutus	12	3		1			7	2					2									1		
Rheumatismus subacutus																								
Syphilis primitiva	5	5		2			5	2		2	1								1					
Syphilis consecutiva	4	4		2	1																			
Senectus																								
Aggregate	34	11		11	3		16	4		9	8		4	1					1			1		
Ratio per M	8.23	2.66		2.66	0.72		3.87	0.97		2.22	1.93		0.97	0.24					0.24			0.24		

| LOCAL DISEASES. | | |

TABLE III.—*Showing the number of cases, the invalided and dead, for each disease on each vessel, &c.*—Continued.

Diseases and injuries.	Colorado.			Franklin.			Saint Louis.			New Hampshire.			Passaic.			Wyandotte.			Montauk.			Manhattan.		
	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.
LOCAL DISEASES—Continued.																								
Diseases of the teeth.																								
Odontalgia										1														
Aggregate										1														
Ratio per M										0.24														
Diseases of the circulatory system.																								
Angina																								
Hypertrophia cordis																								
Morbi valvularum cordis	2			1			1		1															
Palpitatio																								
Pericarditis																								
Phlebitis																								
Varix	1																							
Aggregate	3			1			1		1															
Ratio per M	0.72			0.24			0.24		0.24															
Diseases of the absorptive system.																								
Adenitis	6	5		2	1																			
Aggregate	6	5		2	1																			
Ratio per M	1.45	1.21		0.48	0.24																			
Diseases of the respiratory organs.																								
Anurma																								
Asthma	25	11		5			6	1					1											
Bronchitis acuta	1	1					1						1											
Bronchitis chronica	5	1					2			5			2											
Catarrhus																								
Catarrhus bronchialis																								

| | | |

TABLE III.—*Showing the number of cases, the invalided and dead, for each disease, on each vessel, &c.*—Continued.

Diseases and injuries.	Colorado.			Franklin.			Saint Louis.			New Hampshire.			Passaic.			Wyandotte.			Montauk.			Manhattan.		
	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.
LOCAL DISEASES—Continued.																								
Diseases of the genito-urinary system—Continued.																								
Enuresis																								
Gonorrhœa	5	2		7									1									1		
Hæmaturia																								
Hydrocele				1																				
Ischuria																								
Nephritis																								
Orchitis	3	3		3						1														
Paraphymosis																								
Phymosis	1	1																						
Prostatitis																								
Spermatorrhœa																								
Urethræ strictura	1	1																						
Varicocele																								
Aggregate	13	10		11			2			3			1									1		
Ratio per M	3.14	2.42		2.66			0.48			0.72			0.24									0.24		
Diseases of the locomotive system.																								
Arthritis																								
Ankylosis																								
Necrosis																								
Periostitis																								
Synovitis	4	2								1														
Aggregate	4	2								1														
Ratio per M	0.97	0.48								0.24														
Diseases of the integumentary system.																								
Abscessus	5		1	3			1			3			1											
Acne				1																				
Anthrax							1																	
Eczema	5	3		1																				
Erythema																								

Furunculus	9	1		4						5																				
Herpes	1	1																												
Impetigo																														
Lichen																														
Onychia										1																				
Paronychia	2	1											1																	
Pernio										5																				
Scabies	1	1																												
Unguis involutis							1			3																				
Ulcus	1	1		3			1			2			2	1																
Urticaria				1																										
Verrucæ																														
Aggregate	24	8	1	13			4			19			4	1																
Ratio per M	5.87	1.93	0.24	3.15			0.97			4.60			0.97	0.24																
Poisons.																														
Alcoholismus	2			1			5			1			1																	
Ebriositas				4			2																							
Aggregate	2			5			7			1			1																	
Ratio per M	0.48			1.21			1.69			0.24			0.24																	
Tumors and cysts.																														
Cystis	1	1																												
Sarcoma																														
Aggregate	1	1																												
per M	0.24	0.24																												
diseases and deaths.																														
	2			1						5																				
	1			3			1			2																				
rebri																														
	10	3		3			6	1		8			1																	
	3	3															1													
	1	1					1	1																						
	12	2		5			6			2																				
nus contusum	7	1		6			2	1		8																				
Vulnus incisum	4						1			4																				
Vulnus laceratum	1	1		1			1			1																				
Vulnus punctum	1			2			1			1																				
Aggregate	42	11		21			19	3		31			1				1													
Ratio per M	10.17	2.66		5.08			4.60	0.72		7.51			0.24				0.24													

TABLE III.—*Showing the number of cases, the invalided and dead, for each disease on each vessel, &c.*—Continued.

Diseases and injuries.	Mahopac.			Lehigh.			Catskill.			Ajax.			Canonicus.			Alarm.			Bache.			Gedney.		
	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.
GENERAL DISEASES.																								
1.—*Zymotic diseases.*																								
Catarrhus epidemicus																6								
Cynanche parotidea				2			3																	
Diphtheria																								
Erysipelas																								
Febricula				1																				
Febris continua simplex							1																	
Febris entetica																								
Febris flava																								
Febris intermittens	1									4			10			3			1			1		
Febris remittens				6			1			4			1									1		
Febris typhus										1	1													
Morbilli										1	1													
Scarlatina																								
Vaccinia																								
Aggregate	1			9			5			10	2		11			9			1			2		
Ratio per M	.24			2.22			1.21			2.56	.48		2.66			2.22			.24			.48		
2.—*Constitutional diseases.*																								
Adynamia																								
Anæmia																								
Hydrops																								
Podagra																								
Lumbago																								
Rheumatismus chronicus							1																	
Rheumatismus acutus				1						1			1			3	1							
Rheumatismus subacutus																								
Syphilis primitiva																1			1					
Syphilis consecutiva	1	1		1																				
Senectus																								
Aggregate	1	1		2			1			1			1			4	1		1					
Ratio per M	.24	.24		.48			.24			.24			.24			.48	.24		.24					

LOCAL DISEASES.																									
8.—Diseases of the nervous system.																									
Apoplexia																									
Cephalagia																									
Convulsio				2			1																		
Dementia																									
Epilepsia																									
Insolatio																									
Irritatio spinalis																									
Insomnia																									
Mania																									
Melancholia																									
Meningitis																									
Nausea marina																									
Neuralgia										1			1			1						1			
Paralysis																									
Pleurodynia																									
Vertigo																									
Aggregate				2			1			1			1			1						1			
Ratio per M				.48			.24			.24			.24			.24						.24			
9.—Diseases of the eye.																									
[illegible]opia																									
[illegible]ia																									
[illegible]tivitis																1									
[illegible]um																									
[illegible] lachrymalis																									
[illegible]ralopia																									
[illegible]rdeolum																									
Iritis																									
Keratitis																									
Ophthalmia																									
Ophthalmia tarsi																									
Aggregate																1									
Ratio per M																.24									
5.—Diseases of the ear.																									
Otalgia																									
Otitis										1															
Otorrhœa																									
Surditas																									
Aggregate										1															
Ratio per M										.24															

TABLE III.—*Showing the number of cases, the invalided and dead, for each disease on each vessel, &c.*—Continued.

Diseases and injuries.	Mahopac.			Lehigh.			Catskill.			Ajax.			Canonicus.			Alarm.			Bache.			Gedney.		
	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.
LOCAL DISEASES—Continued.																								
6.—Diseases of the teeth.																								
Odontalgia																								
Aggregate																								
Ratio per M																								
7.—Diseases of the circulatory system.																								
Angina pectoris																								
Hypertrophia cordis																								
Morbi valvularum cordis																								
Palpitatio	1	1														2								
Pericarditis																								
Phlebitis										1														
Varix																								
Aggregate	1	1								1						2								
Ratio per M	.24	.24								.24						.48								
8.—Diseases of the absorbent system.																								
Adenitis													1											
Aggregate													1											
Ratio per M													.24											
Diseases of the respiratory organs.																								
Apnœa																								
Asthma													2											
Bronchitis acuta							1									1								
Bronchitis chronica				2			2			2														
Catarrhus																								
Catarrhus bronchialis																								
Emphysema																								

[illegible]																		1	1					
Phthisis pneumonica acuta							1	1																
Phthisis pneumonica chronica																								
Pleuritis																								
Pneumonia																								
Aggregate				2			4	1		2			4			1			1	1				
Ratio per M				0.48			0.97	0.24		0.48			0.96			0.24			0.24	0.24				
Diseases of the digestive system.																								
Ascites																								
Cholera morbus																2			1					
Cirrhosis hepatis																								
Colica				1									2			7			1					
Congestio hepatis																								
Constipatio																5								
Diarrhœa acuta													1			5								
Diarrhœa chronica										3														
Dysenteria acuta																						1		
Dysenteria chronica																								
Dyspepsia																								
Enteritis																								
Fistula in ano																								
Gastritis													1											
Gastrodynia																1								
Hæmatemesis																								
Hæmorrhois										1														
Hepatitis acuta																								
Hepatitis chronica																								
Icterus																								
Pharyngitis																3			1					
Proctitis																								
Splenitis													1											
Stomatitis																						1		
Tonsillitis																								
Vermes							1																	
Aggregate				1			1			4			5			23			3			2		
Ratio per M				0.24			0.24			0.97			1.21			5.57			0.72			0.48		
Diseases of the genito-urinary system.																								
Albuminuria																								
Balanitis																								
Chancroid																						1		
Cystitis																								
Descensus calculi per ureteres										1														
Enuresis																								

TABLE III.—*Showing the number of cases, the invalided and dead, for each disease on each vessel, &c.*—Continued.

Diseases and injuries.	Mahopac.			Lehigh.			Catskill.			Ajax.			Canonicus.			Alarm.			Bache.			Gedney.		
	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.	Cases.	Inval'd.	Died.
LOCAL DISEASES—Continued.																								
Diseases of the genito-urinary system—Continued.																								
Gonorrhœa	2			4			1						2			2			1			1		
Hæmaturia																								
Hydrocele																								
Ischuria													1											
Nephritis																								
Orchitis				1	1					2														
Paraphymosis																								
Phymosis																								
Prostatitis							1	1																
Spermatorrhœa																								
Urethræa strictura																								
Varicocele																								
Aggregate	2			5	1		2	1		3			3			2			1			2		
Ratio per M.	0.48			1.21	0.24		0.48	0.24		0.72			0.72			0.48			0.24			0.48		
Diseases of the locomotive system.																								
Arthritis																								
Ankylosis																								
Necrosis																								
Periostitis				1																				
Synovitis																								
Aggregate				1																				
Ratio per M.				0.24																				
Diseases of the integumentary system.																								
Abscessus							1						1			2								
Acne																								
Anthrax										1						1								
Eczema																								

Herpes																									
Impetigo																									
Lichen																									
Onychia																									
Paronychia																			1						
Pernio				1																					
Scabies																									
Unguis involutus																									
Ulcus																									
Urticaria																									
Verrucæ																									
Aggregate				1			2	1		2			1			3			2						
Ratio per M				0.24		..	0.48	0.24	.	0.48			0.24			0.72			0.48						
Poisons.																									
Alcoholismus				1			1			1			1												
Ebriositas																									
Aggregate				1			1			1			1												
Ratio per M				0.24			0.24		..	0.24			.024		..							..			
Tumors and cysts.																									
Cystis																									
Sarcoma																									
Aggregate																									
Ratio per M																									
Violent diseases and deaths.																									
asio										1						1									
bustio																1									
cussio cerebri																									
tusio							2			2			1						3						
ctura				1																					
ecrnia							1	1																	
Luxatio																									
Stremma				3	1					2	1								1						
Vulnus contusum																									
Vulnus incisum	1	1		1																		1			
Vulnus laceratum																3									
Vulnus punctum							1															1			
Aggregate	1	1	..	5	1		4	1	..	5	1		1	..	..	5			4			2			
Ratio per M	0.24	0.24	..	1.21	0.24		0.97	0.24	..	1.21	0.24	..	0.24		..	1.21			0.96			0.48			

NAVAL HYGIENE.

TENNESSEE.

The Tennessee was in commission the latter 21 days of the fourth quarter 1879 as flag-ship of the North Atlantic station; during this period she lay at the New York navy-yard.

POWHATAN.

During the first quarter 1879 the Powhatan lay at the Norfolk navy-yard 31 days and visited Puerto Cabello, S. A., various points on the West India Islands, and Key West, Fla., in all, 57 days in port and 33 at sea. In the second quarter 70 days were spent in Hampton Roads, Va., 3 at Port Royal, 11 at New York, and 7 at sea. In the third quarter 35 days were spent at New York, 10 at ports on New England coast, 8 at League Island navy-yard, 5 in Hampton Roads, 3 at Pensacola, and 31 at sea. In the fourth quarter 87 days were spent at New York, Norfolk, Annapolis, Yorktown, and Hampton Roads, and 5 at sea. During the entire year this vessel lay in port 289 days and was at sea. 76 days.

PLYMOUTH.

During the first quarter 1879 the Plymouth lay in port at Boston, Mass., 74 days, and was at sea 16 days. In the second quarter 39 days were spent at quarantine Portsmouth, N. H., and 6 at sea. During the entire period of this vessel's commission she lay in port and at quarantine 113 days, and was at sea 22 days.

VANDALIA.

During the firstquarter 1879 the Vandalia lay at Boston, Mass., 78 days and was at sea 12 days. In the second quarter 10 days were spent at Aspinwall, U. S. C., 41 at the various ports along the coast from Boston to Key West, and 39 at sea. In the third quarter 58 days were spent at various ports along the coast and 34 days at sea. In the fourth quarter 30 days were spent at New York, 2 at San Juan del Norte, Nicaragua, 3 at Havana, 8 at Aspinwall, 4 at Vera Cruz, Mexico, 11 at various small ports along the southern coast, and 35 atsea. During the entire year this vessel lay in port 244 days, and was at sea 120 days.

The following extract from the report of Surgeon J. R. TRYON contains important hygienic hints both as regards the Vandalia and also other vessels cruising on the North Atlantic Station:

This ship is a third-rate sloop of war built of carbolized timber, and launched at the Boston navy-yard in 1874. Her construction, regarding accommodation for officers and crew and general capacity, is considered modern, and compares favorably with vessels of the same class in other navies. I joined the ship at Boston, Mass., February 5, 1879, upon her return from a three years' cruise on the European station. As the minutiæ of air space, dimensions of cabin, wardroom, berth-deck, etc., must have been reported upon by my predecessor, I confine myself solely to points of interest called for coming under my own observation.

Vessels belonging to the North Atlantic station, with a constant liability of being called upon to make frequent and prolonged cruises in the West Indies, require special attention by the department as to proper ventilation, improved accommodations, and general outfit.

The duties of a medical officer assigned to a vessel of the Vandalia class on this station,

e the complement of officers and crew amounts to two hundred and over, become
ce arduous and most responsible. The frequent changes of climate to which all are
sed, the liability when in southern ports to the introduction of epidemic disease,
lmost constant exposure to malarial influences, the faulty ventilation, and the
ulties attending the observance of special hygienic rules, are some of the obstacles
have to be contended with, and impossible to overcome in many instances so as
ep up a good sanitary state and healthy condition of officers and crew.
nedical officer may advise, and the commanding officer may approve, and do all in
ower to establish sanitary reforms, but until the department causes to be made
in radical changes in the ships attached to the station there can be no improve-
in the general health.
ch has been written about the ventilation of our ships of war, and the system
h has been introduced on board the flag-ship Richmond, now in China, if found
ssful should be placed on board vessels of this and other stations. In addition to
modes of ventilation other improvements should be made which would act mate-
in favor of the health and comfort of officers and crew.
great fault prevailing on most of our ships, and observed particularly on the
alia and other vessels of her class, is the imperfect ventilation of the bilge. The
ir by this defect gets banked up below, and instead of passing through insuffi-
channels, made for its escape, forces its way out on the berth-deck and into the
s of wardroom officers. On board this ship, over every knee on the berth-deck,
ound openings for the exit of foul air from below, and in the cabins of officers
are large spaces above the beams which permit the escape of the same poisonous
nt. When the ship is under sail, smoke-stack lowered and covered, and main-
et, quarters below are unhabitable. If we reflect that the system depends upon
espiration to rid it of most of its carbonaceous waste, and to supply it at the
time with oxygen to support life, and that the whole animal economy through
espiratory organs is affected by the character of the inspired air, some of the evil
itions to which officers are exposed at such times can be imagined.
e bilges should be completely free, with a clear passage-way that can be well and
ly kept clean and dry, and additional escapes for the confined air made through
unicating tubes terminating inboard underneath the hammock-rail. The open
s above the knees on berth-deck, including wardroom, steerage, warrant officers,
s, and sick-bay, should be completely ceiled up. I am in favor of having all
s occupied as sleeping apartments below decks entirely ceiled with some suitable
l, tongued and grooved, before the introduction of the bunk. Instead of the heavy
head and door opening into the country, with the thick curtains, the side and
s should be on the Venetian plan, with blinds fixed, giving free admittance to air,
sliding doors. Quarters portioned off for the sick should be fitted in the same
ner. Permanent ventilating shafts should extend from after part of wardroom
oop-deck.
ie sick bay depends now upon the "wind-sail" for ventilation, which cannot be
during wet weather, and cannot be set oftentimes under sail; it should, there-
be supplied with permanent ventilating shafts, extending to forecastle. The
astle, where many of the men berth, is nothing more than a closed cell, and the
y observation has been found more impure than on the berth-deck.
aring heavy weather, the heat from the galley, the smell of cooking, and the
s from the water-closet render the place unbearable. Air-ports should be intro-
d on both sides, as they can always be kept open in port and most of the time at
while the galley might be removed amidships forward of smoke-stack. Officers'
r closets should be placed aft, and the space utilized by their removal by build-
a suitable wash-room for the men. Such a place could be made with little ex-
e, and by the introduction of iron basins and tubs, and floor well lined, could
ys be kept neat and clean. A convenience of the kind for washing and bathing
ld add greatly to the cleanliness and health of the crew.
ew that the department is endeavoring in every way to Americanize the Navy,
introducing into the service, by means of the apprentice system, a higher stand-
of efficiency and a better class of men, it is advisable that many of the customs on
d sea-going vessels at the present time should be dispensed with, so that the appren-
when received from the training ship, will be able to continue the advantages
ided for him there. The whole style of messing should be changed, facilities for
ing given, and improvement made in the "head" of every ship. Instead of the
r mess-cloth now in use, and rolled away in its filth and grease on the berth-deck
impregnate the atmosphere, benches and tables of suitable wood should be fur-
ed, with fixed racks and movable legs, to be slung on a seaway and used on
in port, to be easily secured after meals. The "head" should be enlarged and
red in. Exposure of the men in this uncomfortable place during all sorts of
ther has been the cause of as much disease in the Navy as is attributable to other
oid influences. The long canvas chutes, soaked with filth of the worst descrip-

tion and allowed to swing exposed to the sun and all kinds of weather, filling the air about the ship with foul odors, should be abandoned, and standing copper ones introduced. The men should be provided with a water-closet under the forecastle to be used in bad weather.

Although the temperature in the engine-room of this ship when under steam in the tropics does not range as high as in other vessels of her class, still there is a necessity for better ventilation. Two cases of thermic prostration have appeared while under steam, south, with an average temperature of 110°, and men at labor in that degree of heat necessarily come off watch exhausted and often require treatment. Free stimulation in many cases has been indicated.

Overcrowding, excessive heat and moisture below decks, with imperfect ventilation, are the worst evils we have to contend with on board ship, and to improve these conditions as much as possible is the object of every naval sanitarian.

The daily atmospheric observations now customary on board vessels of war are productive of good by revealing the actual state of affairs, and will in time verify by statistics existing evils. All the circumstances attending carbonic acid observations should be most accurately stated, and to prevent the omission of valuable data a note appended to the form now in use requiring such particulars would be of service.

The spar deck is washed down every morning on board this vessel, and the berth deck is scrubbed twice a week, except in wet weather, when it is sprinkled with clean dry sand. The wetting of the berth deck is indispensable to cleanliness, and if washed at proper times, when weather and other circumstances favor its rapid drying, can do no harm. It is from the indiscriminate use of water without judgment, keeping the air, below constantly saturated with moisture, that an effective cause of disease is produced. A wainscoting 3 feet high, of suitable material, built around the berth deck, and free use of shellac to sides and deck, although more expensive, would greatly improve its appearance, and could at all times be kept clean and dry and make a much more comfortable place for berthing. This wainscoting should be extended to the sick bay, and near its base seats should be arranged, with hinges and suitable support, so as to be let down when not in use. Patients now applying for medical aid, if too ill to stand up, have to recline on the deck.

I can see no reason why neat lockers should not be provided for every man on the berth deck, and so dispense with the "ugly black bag" now in use, absorbing all the light and dirt. One bag, to be used only at time of transfer or discharge, is all that is needed. Such lockers could be inspected whenever necessary, as the keys, in every instance, after use, should be turned in by the men to the master-at-arms.

Every sick bay should be supplied with water-closet, properly ventilated, fixed bath tub, operating table, steam radiator, and chair for transporting wounded, to be used at general quarters. A stretcher should be allowed in every general outfit.

For the protection of the sailor against exposure in bad weather in different climates, and to secure his services at all times, by preventing disease which often follows, it would be economy to the government to supply men whose duties are required on deck with a suit of rain-clothes. Such suits should form a part of every man's outfit, and could be furnished by contract, of a uniform pattern, fitted in a bag and afterwards marked with his ship's number, at a comparatively low cost. They could be easily stowed on the same hook with his bag, or in a zinc-lined compartment underneath the proposed locker. At present no man can do boat duty and duty on deck during inclement weather without being wet through, and the facilities for drying any article of apparel are so imperfect that, after one or two shifts, he is obliged to go about the deck in wet clothing, and the evil consequences resulting from such unavoidable exposure is self-evident. A centrifugal clothes-dryer has already been suggested, and should be supplied to all sea-going ships.

It would add to the health and comfort of the crew if ships attached to this station, and liable to cruise in the tropics, were supplied with double awnings. The routine exercises on deck, at great guns and daily drills, could then be carried on with little danger, no cause for complaint, and a better efficiency secured.

Pure water for drinking purposes is indispensable to health, and all vessels cruising in the West Indies should rely upon the condensing apparatus for such supply. Even good potable water from the shore, harmless in character when used rapidly in Northern ports, if taken on board in large quantities to be used during a Southern cruise, and exposed to the heat of the hold and motion of the ship, frequently decomposes and produces disease. I have seen two epidemics of acute dysentery at sea in southern latitudes traceable directly to this cause. The absolute use of condensed water in the tropics should be made department order.

On board this ship there are two copper-coiled distillers, and one of the kind patented by Passed Assistant Engineer Baird. The coil distillers, or, rather, condensers, are erected as a pair, and produce together about 2,000 gallons of water in 24 hours. The coils are of copper, not coated with tin, and have no means of aerating nor filtering the water. The water, however, is very good after a few days' exposure to the

the tanks. The patented distiller is provided with aerators and filter and con-
ng surface coated with tin; capacity about 1,000 gallons in 24 hours of water fit
nk at once.

e necessity for carrying out existing regulations for recruiting cannot be too
gly urged, and special attention should be given to the physical condition of
hipped for different ratings. Men who have to work in fire-room as coal-heavers,
nd second class firemen, should never be under twenty-one years of age, be spe-
selected for such duty, and required to reach some general standard before being
d. The system of placing apprentice-boys in engine and fire room should be
loned. Young men of this class should get their information on training-ships
hops on shore, and not on board sea-going vessels at the expense of the govern-
and their own health; their universal complaint is, that they do the work of a
nd receive the pay of a boy, which is true.

ystem of reporting by prescribed form to the Bureau of Medicine and Surgery
man coming under the notice of medical officers, considered unfit to be reshipped
count of bad medical record or physical incapacity, would be a great saving of
and also a convenience to examining surgeons, besides proving beneficial to the
e. Epilepsy, stricture of the urethra, internal hemorrhoids, angina pectoris,
, etc., can often be overlooked in the examination of recruits. The reports of
ases, and others, could be referred to the Chief of Bureau of Equipment and
iting, or Commandant of Marine Corps, in case of an enlisted man, and the in-
tion communicated by them to the recruiting officer.

n a man's discharge from service on continuous service certificate, or otherwise,
at appears to be indicated to carry out the wishes of the government is a certifi-
n the face of the discharge as to the physical condition of the man at the time
revious medical record, by the medical officer of the vessel or station where the
as served.

mission to ship men for special ratings with disabilities, however slight, should
be granted, There are always several on board every ship, and therefore make
e class in the Navy, although they have no claim for pension; they are fre-
ly unable to perform their duty, and can shirk it whenever they choose.

rses should be shipped to do the duties of their rating only, and specially in-
ed in everything pertaining to the care of the sick and wounded. If found quali-
perform such duties satisfactorily, exhibiting habits of cleanliness and sobriety,
hould receive at the end of a cruise, or time of discharge, a recommendation from
edical officer under whom they have served, which should entitle them to prefer-
n presenting it when nurses are selected for duty on board sea-going and receiving
and at naval hospitals.

duates in pharmacy only should hold the position of apothecary on board ves-
war in the Navy, and it is hoped the position will soon be so improved by legis-
enactment that appointments in the grade will be acceptable to competent
the services of such a class are very much needed.

instructions should contain some directions by which special diet can be pre-
for the sick on sea-going ships, and not have those on the "list" dependent as
re now upon the charity of mess cooks. When a man is to be under the surgeon's
or any length of time, and requires other diet than his regular ration, some
edge and care is needed in preparing it, and if such a portion of the patient's
could be commuted as would secure the services of some one of the many stew-
n board to do the duty as directed, it would not only be beneficial to the sick
but a great relief to the medical officer in charge.

hate of iron has acted better as a disinfectant than any other preparation tried.
been used constantly in the bilges, and has aided materially in purifying that
f the ship. A preparation was placed on board at Port Royal called "anti let-
powder, and was tried in officers' water closets, and "head," but its composition
unknown, and its action unsatisfactory, it was discontinued after a time, and
lphate of iron substituted.

ers and crew of Vandalia were received on board at navy-yard, Boston, Mass.,
22, 1879; the ship remained there until April 6, 1879, then proceeded to Norfolk,
nd left on the 19th for a cruise in the West Indies, returning north June 11,

The following table represents the number of days in each port and at sea during that time, average number on sick-list daily, and number transferred to hospital:

Station.	Number days in port and at sea.	Daily average sick-list.	Number sent to hospital.
Boston, Mass	16	5	4
At sea	5	6	.....
Norfolk, Va	7	8	1
At sea	9	8	.....
Kingston, Jamaica	4	8	.....
At sea	5	6	.....
Aspinwall, U. S. C	10	4	1
At sea	11	4	.....
Key West, Fla	6	6	.....
At sea	2	8	.....
Port Royal, S. C	1	7	.....
At sea	4	6	.....

It will be observed from the above that the daily average sick-list was larger and more men were sent to hospital while the vessel remained north than during the cruise south, but this is attributed more to the exposure during an inclement season of the year, and injuries incident to ship-life, than to other causes; for, according to the Medical Journal, nearly every case of miasmatic and diathetic disease, and diseases of the digestive system, occurred while the vessel was in the tropics, as follows:

Disease.	Admitted north.	Admitted south.
Febris intermittens	1	4
Febris remittens	.....	1
Rheumatismus acutis	1	8
Diarrhœa acuta	.....	7
Dysenteria acuta	.....	1
Furunculus	3	21
Adynamia	.....	1
Total	5	43

The small sick-list on board while absent is no doubt due to the shortness of the cruise, avoiding ports known to be unhealthy, and strict adherence to rigid sanitary rules during the entire time. The following recommendations were made to the commanding officer to prevent, as far as possible, the appearance of disease on board:

1st. The crew to be exposed as little as possible to the heat of the sun.

2d. To have awnings triced up for a time in the morning, and an hour before sun set, to ventilate the ship, and spread, for the night, before the appearance of dew.

3d. If continuous rain, to keep the ship as dry as possible by the use of awnings.

4th. The berth-deck to be kept cleared of all articles that absorb moisture, and the deck sprinkled with fresh sand daily.

5th. To depend upon condensing apparatus for water supply.

6th. To have bumboats inspected by a medical officer to see that ripe fruits and proper articles of diet are sold to the crew.

7th. To grant permission to officers to wear light clothing on shore.

8th. General liberty should not be allowed.

9th. Men to be cautioned as to the necessity of cleanliness of person and quarters.

10th. When wet, though on boat or other duty, and in any way indisposed by headache, slight diarrhœa, etc., to be directed to consult a medical officer at once.

11th. To have "head" whitewashed and disinfected daily.

12th. Officers' water-closets to be disinfected daily.

13th. Bathing at sundown whenever safe and practicable.

From what has been written it will be seen that the Vandalia has been South a great portion of the time, has cruised in the tropics during the most unfavorable season of the year, and at a time when communication with any part of the West Indies should be considered dangerous by the known severe epidemics of yellow fever prevailing both at Havana, Cuba, and Port au Prince, Hayti.

In times of peace, when the routine of the service will permit, it is a wise policy not to expose healthy ships in southern ports where there is a liability to the disease

ellow fever months. Crews of vessels belonging to the home station particu-
uire those months north to recruit properly for their duty in the West Indies,
at all times and at all seasons most arduous in character, and enervating to
itution. The English squadron on the station has followed this rule for many
th great benefit, as will be seen by comparing the health rates given in Ad-
eports at the present time and former years.
llowing table, embracing time passed north and second cruise south, shows
ber of days in each port and at sea, average number on sick-list daily, and
transferred to hospital from June 11, 1879, to December 1, 1879, inclusive:

Station.	Number days in port and at sea.	Daily average sick-list.	Number sent to hospital.
'a	7	6	8
	2	3	
	11	2	2
d Sound	1	2	
n	8	3	
on	7	2	
d Sound	1	1	
	2	2	
ord	3	3	
	2	3	
a	5	3	
	7	5	
, S. C	4	5	
	11	4	
Fla	11	4	4
	13	4	
, United States of Colombia	10	3	
	1	5	
orro, Isthmus Chiriqui	9	5	
	2	6	
Nicaragua	2	6	
	3	6	
agoon	2	8	
	1	5	
, United States of Colombia	6	9	2
	12	6	
, Mexico	4	7	
	10	6	
, Fla	8	7	
	1	11	
uba	3	10	
	6	10	
to date of detachment, December 9, 1879	7	4	

rge number on sick-list, and transferred to hospital at Norfolk, is explained
ct that the vessel had but just arrived from the tropics, and was immediately
to return, when it was considered advisable to transfer not only cases suffering
ease contracted by exposure to climatic influences south, but also those on the
ot likely to recover very soon, and those whose age and other disabilities ren-
em unfit for active service. The large number appearing after leaving Key
as due to casualties received during liberty given to the crew at that place.
cases sent to hospital at New York, and Pensacola, and invalided home from
ll, were transferred with two exceptions for diseases contracted by exposure
opics.
erring to the above table, and comparing the daily average sick-list on board,
d south, it will be seen that it was twice as large when the ship was in
latitudes, and the same result appears regarding special diseases treated—as
y the following data taken from the Medical Journal.

Diseases.	Admitted north.	Admitted south.
tinua simplex	1	1
ermittens	1	10
nittens		8
	1	9
smus acutus		1
smus chronicus	1	
acuta	5	5
a acuta	2	1
us	4	8
l	15	43

Taking the figures in the above table and those contained in a similar one preceding, it will be observed, out of 95 cases of miasmatic and diathetic disease and diseases of the digestive system, only 20 occurred when the ship was in northern latitudes, proving conclusively the increased liability to diseases of that nature in the tropics.

The difficulties attending the preservation of a proper standard of health in certain southern localities, owing to their unfavorable sanitary conditions, is known to every one in the service. Men and officers, like other persons born in northern latitudes, suffer by sudden exposure to extremes of climate; are susceptible to excessive heat; are affected by poor diet; and inherit constitutions that never become accustomed to the morbific influences of tropical countries. The number of men and officers on board the Vandalia for the year has averaged over two hundred in spite of the changes constantly taking place by transfer, discharges, etc.

The crew at the beginning was composed largely of men whose terms of service had nearly expired, and as discharged their places were filled by those having only a few months to serve. The draft of apprentice boys received at Norfolk before going to sea are the only ones that have remained continuously on the ship; the large number transferred from the Alaska, Pacific station at Isthmus of Panama, were on board but a few months. This constant changing permits only a proportional statement of the liability of different rates and ages to disease.

The following table gives number of officers and men of different rates on board during the year and the number treated, all classified according to age:

Year 1879.	Grade.													
	Officers.		Seamen.		Ordinary seamen.		Landsmen.		Marines.		Firemen.		Apprentices.	
Ages.	On board.	Treated.	On board.	Treated.	On board.	Treated.	On board.	Treated.	On board.	Treated.	On board.	Treated.	On board.	Treated.
15 to 20	.....	.....	1	.....	.....	.....	6	3	1	.....	.....	.....	79	46
20 to 25	7	5	6	4	8	7	27	12	9	7	5	1	10	5
25 to 30	6	4	14	8	5	5	16	7	16	10	8	2	.....	.....
30 to 35	6	4	9	9	2	1	7	5	5	5	8	2	.....	.....
35 to 40	7	3	10	10	2	2	6	.....	2	.....	6	6	.....	.....
40 to 45	5	1	4	4	.....	.....	1	.....	.....	.....	2	2	.....	.....
45 to 50	1	.....	4	4	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
50 to 55	.....	.....	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
55 to 60	.....	.....	3	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
60 to 65	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
65 to 70	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total...	32	17	54	45	17	15	64	27	33	22	29	13	89	51

The physical condition of the crew received on board from time to time has been good with few exceptions. Some were found suffering from disease contracted during term of enlistment, and a few disabled for active service on account of old age; all such cases were transferred to hospital as opportunity offered. The apprentices received after three years' service on the Pacific station were remarkable for their physique—a strong and hardy set of young men; firemen and others belonging to regular engineers' force well adapted physically for the duties required of them. The nativity of crew and patients treated is given below.

Nation.	Crew.	Patients treated.
United States of America	171	129
Great Britain	14	14
Ireland	31	31
Germany	6	6
Austria	1	1
Denmark	2	2
Norway	2	2
Switzerland	2	2
France	2	2
Italy	2	2
Russia	1	1
West Indies	5	5
Mexico	1	1
Canada	1	1
Newfoundland	6	6

KEARSARGE.

e Kearsarge was commissioned May 16, 1879. During the remain-
days of the second quarter she lay at the ports of Portsmouth,
, and New York 44 days, and was at sea 2. In the third quarter the
of St. John's, Placentia; Prince Edward Island, Charlottetown;
a, Nova Scotia; St. Pierre, Port Hawkins; Halifax, Portland and
n were visited, in all 60 days in port and 32 at sea. In the fourth
er she visited Annapolis, Md., and cruised along the southern
from Hampton Roads to Savannah, Ga.; she also called at Kings-
amaica; Santiago, Cuba; and ports in Honduras, in all 62 days in
and 30 at sea. During the entire year this vessel lay in port 166
and was at sea 64 days.

sed Assistant Surgeon WILLIAM A. CORWIN remarks regarding
ygienic condition that—

ie ship's company, a large number were transferred from the Plymouth, which
iereafter was put out of commission in consequence of the well known outbreak
ow fever on board.

Kearsarge during the summer cruised to the northward, visiting various ports
as St. John's, Newfoundland, which port she made July 20. Returning, she
o Norfolk, Va., at which place I joined her November 5, 1879. Her company
date is 196. The air space of the ship, after all deductions, is apportioned as
(I have allowed an average deduction of 6 cubic feet for the space taken by
an and hammock):

Part of ship.	Air space in cubic feet.	Number of persons occupying.	Air space in cubic feet to each person.
.....	4,327.6	1	4,327.6
m, country and rooms	4,368.19	12	364.01
, country and rooms	2,470.02	9	274.44
ck	9,845.58	In port, 120 At sea, 80	76.04 117.06
.....	1,466.84	Various	Various.
le	6,929.98	In port, 60 At sea, 30	109.49 224.98

hip has a poop-deck cabin, divided into two apartments by a transverse bulk-
Into the forward apartment two state-rooms open, one on each side. The for-
abin opens on the quarter-deck by two doors, aggregating 25.16 square feet.
so ventilated by two windows, aggregating 16.75 square feet, by one hatch of
re feet area, and four air ports of 7.75 inches diameter each, two of which open
e state-rooms. It is heated by a vertical tubular steam radiator, situated against
nsverse bulkhead. It is lighted by a swinging argand lamp with two burners.
er cabin is ventilated by two doors through the transverse bulkhead, aggregat-
16 square feet, by one hatch of 16 square feet area, two stern windows 14.45
feet, and by two ports of 7.75 inches diameter, one on each side, opening into
h-room and water-closet respectively.

after cabin has communicating with it a bath-room on the port and a water-
n the starboard side. It is lighted by a swinging Hitchcock lamp. The ward-
s ventilated by two hatches aggregating 45.36 square feet, and fourteen air-
ach 7.75 inches diameter, one to each state-room, and two in the pantry. There
antry bulkhead, and the wardroom pantry is ventilated by a tubular ventilator
hes diameter, leading up through after cabin to poop-deck. The ward-room is
by a vertical steam radiator, and lighted by a swinging argand lamp of two
s.

steerage country opens into the ward-room by the two doors before mentioned,
ventilated by one hatch of 16.4 square feet and four air-ports, two opening into
eerage. The steerage is bulkheaded off from the engine-room. A door through
t side leads to engine-room; one on starboard side to steerage pantry.

air space of the berth-deck was increased, in October last, to its present volume
oving the bulkhead of the warrant officers' mess-room, and throwing this space,
ic feet, into the deck. The former dispensary and paymaster's office, amount-
84 feet combined, were also added, and the warrant officers having been de-

tached from the ship, one of their state-rooms was taken for the dispensary, and the other for the paymaster's office. These two rooms combined have a capacity of 569 cubic feet. The berth-deck is ventilated by two hatches, aggregating 51 square feet, and by twelve air-ports, each of 7.75 inches diameter. A vertical tubular ventilator, of 17.75 inches diameter, leads from the berth, through spar deck, to open air, immediately forward of the fire-room bulkhead.

The sick-bay is forward on this deck, as usual, separated from it by a canvas screen instead of the ordinary bulkhead. This extends between decks, is light, affords all necessary seclusion, and is pierced by seven large circular holes along its lower border, to facilitate ventilation. A doorway, closed by a canvas flap, is cut through the starboard side of the screen. When desired, the screen can be removed in a moment. I regard this arrangement as preferable to the wooden bulkhead. The sick-bay is ventilated by a hatch of 8 square feet, and by four air-ports, each 7.75 inches diameter.

A serious impediment to the ventilation of the berth-deck is the fact that it is entirely cut off from the after part of the ship by the coal-bunkers and fire-room bulkhead. A flush berth-deck has the advantage of currents of air at times. Of this we are deprived, and the air below at night is often much contaminated by the products of respiration. Evidences of defective nutrition and disease would probably occur from this cause, were it not for the exercise in the fresh air, incident to daily routine, and the regularity of hours of work, rest, and eating, counteracting influences of the greatest importance. Dryness of the berth-deck, sick-bay, and steerage is secured by frequent applications of shellac, which permits thorough cleaning without soaking, by simply passing a damp swab over the deck. The spar-deck is washed down every morning and holystoned every Saturday.

The ship is heated by steam. There is a heater in the sick-bay, one upon the berth-deck, and one in the steerage, ward-room, and cabin. The lighting of the vessel is effected by lamps consuming lard oil. On the berth-deck are two Fresnel lights and a Hitchcock lamp; the latter on trial. The results obtained from it to this time justify a very favorable report.

The crew are subsisted upon the regular Navy ration, supplemented when in port by fresh vegetables, fruit, etc. The capacity of the ship's tanks is only 2,300 gallons. This necessitates frequent refilling, and the frequency of this emptying and refilling probably promotes oxidation of the iron more rapidly than it would take place were the capacity greater. The water is thus frequently turbid from iron rust for several days at a time, and I have seen, on one or two occasions, slight gastric and bowel disorders among the officers and men, which I believe due to the ingestion of such quantities of iron oxide. Another serious defect is the want of aeration, distillation being effected by means of a simple worm condenser and the water conveyed at once to the tanks while yet warm. With these exceptions, the quality of the water has been excellent, and the excess of iron oxide generally subsides in coolers and pitchers if the water is allowed to stand an hour or two, or is removed by filtration, leaving the liquid clear and unobjectionable. Every time the tanks are emptied they are cleaned and whitewashed prior to refilling. The present tanks were put into the ship at Norfolk, Va., in October last, in place of others holding 2,600 gallons. Since I have been attached to the ship, all water used for cooking and drinking has been condensed, except 1,600 gallons of excellent quality taken in at Port Royal, S. C., early in December.

The ship has been furnished with a small Wanklyn apparatus. The presence or absence of organic impurity in water, a matter of the highest importance, is easily determined by its use. I have used it on several occasions, and, although on account of defective light in the sickbay, the determination cannot be carried to the extreme of refinement possible in a laboratory, enough information can always be obtained to base an opinion upon and determine the acceptance or rejection of the water. This apparatus consists essentially of a medium-sized retort and a small worm condenser. A flask holding about 300 cubic centimeters is supplied; and this, with bent glass tubing, I generally use in the distillation instead of the retort to economize space. A spirit lamp, pipettes, measuring glasses and bottles for the reagents, complete the apparatus, which is inclosed in a black walnut box. Small bulk is a desideratum, and a "stand" is needed, so made that the flask and condenser can be compactly arranged for use. Compactness will also be facilitated by using a narrow and deep condenser with a long, slender worm; 250 cubic centimeters of water is a convenient quantity to operate upon at a time, and allows the use of smaller apparatus than if larger quantities are used.

As regards clothing, every man is required to have two suits of blue, two of white, and two changes of underwear. The clothing is of good quality, but the majority of the crew prefer to draw cloth or flannel from the paymaster and make their own clothes. It seems to me that loose-fitting garments of coarse linen, of regulation pattern, would be, while cruising in the tropics, an excellent substitute for the woolen or cotton outer garments now worn. Under the coarse linen shirt and trowsers should

be worn a woolen undershirt and drawers of medium texture, and the same thickness for all climates, forming an outfit at once comfortable and healthful.

The chief sanitary advantage of flannel, as an article of clothing, is that it is a poor conductor of heat, and this advantage is probably best utilized when it is worn next the skin, destroying or tempering the ill effects of sudden or extreme variations of temperature or humidity. Therefore, in the outfit of the sailor, continually exposed to atmospheric vicissitudes, I would suggest the constant use of flannel underwear of a medium weight for all climates; and, over this, in hot latitudes, during the heat of the day coarse linen outer garments. The adaptability of clothing to temperature should be made in the outer garment, the inner being always the same. Of the relative cost of such an article of coarse linen, compared with woolen and cotton, I am not prepared to speak; but of its great superiority, in point of comfort, for outer wear in the tropics I have no doubt. It is permeable, readily allowing evaporation from surface of skin, and therefore cool. It can be kept clean as easily as cotton, and is probably more durable, which would make it, in the end, cheaper, although the first cost should be a little higher.

Durability, comfort, and cleanliness ought certainly to be considered sufficiently strong considerations to induce experiments in this direction.

The ship, since she has been in commission, has had a daily average sick-list of three men. There have been one hundred and twenty-four cases admitted, of which ninety-seven have been discharged to duty, the balance having been transferred to hospital or elsewhere. There has been one death.

Out of the two hundred and thirty days that have elapsed since the ship was put into commission, sixty-four have been spent at sea.

The Kearsarge, at the time of my joining her, November 5, 1879, was at Norfolk, Va. The chief point of sanitary interest connected with her stay there was an examination of the water supply of that city. The subject was exciting some interest among the health authorities at the time, it having been brought to their attention by several medical gentlemen who had made analyses for organic impurity.

The water comes from a lake, about six miles from town, to a reservoir, some three and a half miles from the city. The pipes between the lake and reservoir are partly wood and partly iron. The capacity of the reservoir is 6,000,000 gallons, divided into two lakes, one of 4,000,000, the other of 2,000,000 gallons.

The water is filtered through a simple sieve, as I was informed at the reservoir, by the engineer in charge. Thence it is conducted to the city through iron pipes. The delivery is about 750,000 gallons daily. The sides of the reservoir and part of the bottom are lined with immense quantities of oyster shells, and there is a considerable amount of sediment covering in older layers of shells, partly visible and extending out from the banks along shelving bottom.

A specimen of this water, procured by me at the reservoir, after having passed through the filter, yielded to the liter free ammonia, milligrams, .532; albuminoid ammonia, milligrams, .560; which should certainly lead to its rejection for drinking and cooking purposes. The quantity of albuminoid ammonia above stated is .08 greater than that found by another experimenter, but the discrepancy is possibly due to slight fluctuations in the amount of impurity. The source of this contamination is probably to be found in the mass of oyster shells in the reservoir, and also in an unascertained degree to vegetable impurities at Lawson's Lake, which, surrounded by woods, is the source of supply.

NIPSIC.

The Nipsic lay at the navy-yard, Norfolk, Va., from December 2 to December 31, 1879, preparing for a cruise on the European station.

SWATARA.

The Swatara was in the North Atlantic fleet the latter seven days of the fourth quarter, 1879, during which period she lay at the navy-yard, Boston.

MARION.

During the first quarter, 1879, the Marion lay at St. Thomas 1 day, at the navy-yard New York 64, at Norfolk 4, and was at sea 21 days. In the second quarter, 45 days were spent at Norfolk, 5 at Vera Cruz and Tampico, Mexico, 17 at various ports along the southern coast, and 29 at sea. In the third quarter, 89 days were spent at Portsmouth, N. H., and 3 at sea. In the fourth quarter, 26 days were spent at Norfolk, 22

at New York, 10 at Portsmouth, N. H., 10 at Hampton Roads and York River, and 24 at sea. During the entire year this vessel lay in port 288 days, and was at sea 77 days.

PORTUNE.

The Fortune was in commission the first quarter, 1879, during which time she lay at the Norfolk navy-yard.

SUPPLY.

The Supply was employed during the first and a portion of the second quarter, 1879, as practice-ship for apprentices of the Navy. During this period she visited towns on Long Island Sound, the greater portion of the time being spent at the New York navy-yard.

MICHIGAN.

The Michigan was on special duty on the lakes of the Northwest during the entire year 1879. Surgeon J. C. KNIGHT reports:

The Michigan is a small paddle-wheel steamer of 450 tons. She was built at Pittsburg, Pa., of Pennsylvania iron, in 1841-'42, and sent in sections through the canal to Cleveland, Ohio, and from there, in steamers and sailing vessels, to Erie, Pa., where she was put together in 1843, placed in commission in 1844, and she has been almost continuously in commission ever since. Her hull is apparently as good now as it was the day she was built. The vessel is of moderate speed in fair weather, but is by no means a good sea boat. In bad weather she is wet and uncomfortable, and it requires only a very moderate head sea to make her so.

With the hatches open and the air-ports out, the ventilation is as good as the average of naval vessels, but with the air-ports in and the hoods over the hatches, the atmosphere soon becomes very impure, to the great discomfort of officers and men. This is greatly increased by the many bad leaks in the deck.

The waterways and decks are very old and there are many decayed places in them, which, in my opinion, cause the leaks, and the old decks and wood-work will have to be replaced by new ones before the sanitary condition of the ship can be much improved. The berth-deck, a very thin wooden one, is nailed to cross-pieces on the iron deck, which has become so worn that it can easily be broken through by stamping on it, and every time it is washed the water runs through on the iron floor below, the major portion of which remains imprisoned there, causing the atmosphere to be damp and unhealthful.

The ship cannot, in my opinion, be made to last longer than another year before being repaired, without the discomfort of all on board being greatly increased and health endangered.

There are two large rooms just outside the wardroom, between which is the main entrance to the latter from the quarter-deck, which gives them ample ventilation.

The average number of officers and men is about 100. The cabin, which is on the after part of the quarter-deck, has about, 3,034.50 cubic feet of air space; occupants, 1. It is ventilated and lighted by a large skylight and several large windows.

The wardroom has about 4,066.5 cubic feet of air space with the state-room doors open; occupants 8, making about 508 cubic feet of air-space for each officer. It is ventilated and lighted by the main hatch, a sky-light, an air-port to each room, and a piece of thick glass set in the deck above. On the berth-deck there are about 7,011 cubic feet of air-space, and as there are rarely more than 75 men sleeping there at any time, each man has about 93 cubic feet of air-space. It is ventilated and lighted by two hatches and the usual number of air-ports.

The ship is heated by steam, and from the close of navigation until the opening of the same she is housed over and a stove is kept foward on the gun-deck for the comfort of the watch on duty. She left Erie, Pa., July 21, under orders from the department to recruit boys for the Navy.

TALLAPOOSA.

The Tallapoosa was employed during the year 1879 as dispatch and freight boat between the various naval stations on the North Atlantic coast.

SPEEDWELL.

The Speedwell was in the North Atlantic fleet 80 days of the third quarter 1879, during which period she was stationed at Provincetown, making frequent excursions into Massachusetts Bay.

RIO BRAVO.

The Rio Bravo lay at Brownsville, Texas, the entire year. Past Assistant Surgeon T. C. HEYL reports that this vessel

Is a river steamboat, such as plies on the Mississippi, carrying cotton, and was once employed in such trade. Her name was the Planter. The upper deck is used for quarters for the officers, officers' galley, mess-rooms, mess store-rooms, wheel-house, armory, and for general duties of the officer of the deck. The men live on a boiler-deck 13¼ feet in height, with excellent berthing space, and thorough ventilation, for the deck is open fore-and-aft, and the vessel so lies that the prevailing southerly winds pass through her. She is provided with large doors, forward and aft, which are shut in inclement weather, and form, with the berth-deck, an oblong square about 30′ 8″ in width, 58′ 6″ in length, and 13′ 3″ in height. The ship's galley is not on the deck, but is in a raised recess forward of the port wheel-house. This avoids heating the berth-deck artificially during the hot season. When the weather is cold enough for a fire, the berth-deck is heated by a wood-stove. This is true of the cabin, ward-room, and steerage.

The food is the usual Navy ration, but fresh food is abundant, as it is brought to the ship daily. The white suits of working clothes furnished the crew answer the purposes of economy and neatness very well. The blue trousers have a good fault, easily remedied, of being, generally, too long. It is difficult to conceive why these should be made with the old-fashioned flap of our forefathers instead of the modern fly, which certainly is simpler in construction, less expensive, and more sightly. The cap, however, can hardly ever be reconcilable to comfort or to convenience, for it is too heavy, and has no visor—a highly useful appurtenance to men's head-gear in almost every condition of civil life, as well as to the soldier, yet, singularly enough, considered superfluous in that of the naval sailor.

I should have stated in the proper place that the forecastle, fantail deck, and guards are protected by awnings from the sun in the long heated term, and from rain in the wet season. The decks are washed daily, the weather permitting; any inclemency suspends this routine.

CONSTELLATION.

The Constellation was in commission 47 days of the second quarter, 73 days of the third, and all of the fourth quarter, 1879. From the 13th of June to the 5th of September she was employed as practice-ship for cadet midshipmen of the Naval Academy, her cruise being from Annapolis, Md., to Halifax, N. S., calling at Newport and other ports on Narragansett Bay and Long Island Sound. In the second quarter, 33 days were spent in port, and 14 at sea. In the third quarter 45 days were spent in port, and 28 at sea. In the fourth quarter, 30 days were spent in the port of New York, 8 at Gibraltar and other Spanish ports, and 42 at sea. During the entire year this vessel lay in port 116 days, and was at sea 84 days.

MAYFLOWER.

The Mayflower was commissioned as practice-ship for the annual cruise of the cadet engineers May 11, 1879, and went out of commission September 3, 1879. The cruise began June 4 and ended August 30, during which period all the principal ports on the coast from Norfolk, Va., to Newport, R. I., were visited.

STANDISH.

The Standish was employed 36 days of the second quarter and 65 days of the third quarter, 1879, as practice-ship for cadet engineers of the Na-

val Academy. Her cruise was from Annapolis to New York, calling at points on Long Island Sound and the Hudson River. Number of days in port and at sea not furnished.

MINNESOTA.

The Minnesota was employed during the year 1879 as training-ship for apprentices of the Navy. During the entire first and second quarters she lay in port of New York. In the third quarter a practice cruise was made to Boston and ports on Long Island Sound and Narragansett Bay. In the fourth quarter 64 days were spent at New York, 11 at New London, 15 at Norfolk and Hampton Roads, and 2 at sea.

CONSTITUTION.

During the first quarter 1879 the Constitution lay at Havre 16 days; at Portsmouth, England, 14; at Lisbon, Portugal, 41, and was at sea 19 days. In the second quarter 11 days were spent at Lisbon, 6 at New York, 27 at Philadelphia, and 47 at sea, 43 of the latter being occupied in passage from Lisbon to New York. In the third quarter 86 days were spent at New York and Philadelphia and 6 at sea. In the fourth quarter 29 days were spent at Norfolk, 28 in Hampton Roads, 8 at New York, 5 at Martinique, and 22 at sea. During the entire year this vessel lay in port 271 days, and was at sea 94 days.

Surgeon F. M. DEARBORN makes some important suggestions bearing upon the sanitary condition of the ship. He says:

Finding the ventilation of the Constitution very defective, I called the attention of the commanding officer to the subject under date of 26th August, 1879, stating that "throughout the berth-deck the bilges pour streams of foul air into the sleeping places of the crew, instead of into the open air of the spar-deck, and the same astounding plan is carried out in the steerage and wardroom."

In every state-room in the wardroom, two or more openings, similar to those upon the berth-deck, covered with perforated plates of metal, discharge bilge-water gases by the side of the berth, seriously affecting the health and comfort of the occupants of the apartment and of every member of the ship's company. The proper remedy will be to carry the ventilating passages of the bilges to the spar-deck, and hermetically seal the present bilge openings upon the berth-deck and in the steerage and wardroom. With these obviously necessary changes, the ventilation of the ship will be far from sufficient, and as the vessel is intended by the department as a training-ship for naval apprentices, it becomes still more important to improve the condition of affairs. Foul air tells upon growing boys much more severely than upon adults. The berth-deck is insufficiently ventilated by small hatches. The wardroom is dark and very badly ventilated; the air-ports are small; the two after state-rooms have no air-ports, while no means are provided for the ventilation of the after part of the wardroom. As the best remedy for the latter serious defect, I would suggest that the ventilating shaft, which already passes from the poop-deck through the spar-deck cabin to the gun-deck cabin, be extended through the gun-deck cabin to the wardroom. If that is considered impracticable because affecting disadvantageously the quarters of the commanding officer, I would earnestly advise that two metallic pipes, not less than 10 inches in diameter, should be introduced, extending, one from the after part of the wardroom, and one from the store-room beneath the wardroom, to the poop-deck; that two similar pipes should lead, one from the forward part of the berth-deck, and one from the forepeak to the forecastle. To these pipes I advise that there should be fitted, as on board the Richmond, Sturtevant's exhausting, reversible, noiseless fans, to be worked by hand, and that two of these fans should be supplied—one for the forward part and one for the after part of the ship. My recommendations were so far carried out as to secure the closing of the bilge ventilating openings upon the berth-deck and in the officers' quarters, but no means were employed, as recommended, to permit the escape of the confined bad air upon the spar-deck, where it should be discharged. Two metallic pipes, 8 inches in diameter, were carried down from the poop-deck into the wardroom, and two more from the forecastle into the sick-bay, and very great benefit has resulted. In addition to improved ventilation, the berth-deck of this ship imperatively needs to be covered with shellac. It is built of porous wood, and

in order to keep it clean, in its present condition, a frequent use of water is necessary, which prevents its ever becoming entirely dry. Frequent hygrometric observations have shown the humidity of the air upon that deck to have averaged very high.

In speaking of the berth-deck, it is worth remarking that of the five serious cases of acute illness occurring on board during the past five months, four of the patients were men closely confined to that deck by their duties as berth-deck cooks. One was a case of meningitis with intercurrent pleuritis, and three were cases of remittent fever of typhoidal type. All were delirious; death resulted in one case. The present usage in the Navy, of keeping the same men continuously employed as berth-deck cooks instead of changing them frequently, as formerly, is very objectionable from a sanitary point of view. When mustered on deck they can at once be recognized by pasty and unhealthy complexions, and they are much more likely to be seriously ill than those of their shipmates who perform their duties on deck and aloft. In all, two hundred and forty-three apprentices have been received on board, the great majority from the South and West. Of these recently enlisted boys no less than twenty have been transferred to hospital for causes existing prior to enlistment, which unfit them for future usefulness in the naval service.

At Norfolk it was not possible to obtain cistern-water from the navy-yard, and the water from the city water-works was very bad. Instead, therefore, the juniper water from the Dismal Swamp Canal was obtained; and, although color and deposit were somewhat objectionable, the water, on the whole, proved satisfactory.

At Fort Royal the water is excellent, unlimited in quantity, and easily obtainable by means of the government water-boat. Delicious fruit abounds; and the city, of eight thousand inhabitants, is one of the cleanest in the world. It was found to be quite healthy, although febris flava existed in the neighboring Island of Guadeloupe. Twenty-three days' quarantine of observation is maintained against healthy vessels arriving from the latter island.

SARATOGA.

The Saratoga was employed during the year 1879 as training ship for apprentices of the Navy. During the first quarter 63 days were spent at the Washington navy-yard, 24 in Hampton Roads, and 3 at sea. In the second quarter 2 days were spent in Hampton Roads, 33 at Fayal, Funchal, Santa Cruz, and Saint George's, and 56 at sea. In the third quarter 1 day was spent at Saint George's, 9 in Hampton Roads, 66 at New York and points on Long Island Sound, and 16 at sea. In the fourth quarter 42 days were spent at the Washington navy-yard, 36 in Hampton Roads and at Yorktown, Va., and 14 at sea. During the entire year 1879 this vessel lay in port 276 days and was at sea 89 days.

Passed Assistant Surgeon A. F. Magruder remarks thus:

The health of the crew has been excellent; no epidemic diseases have appeared during the year, and but few cases of serious illness. There have been no deaths. The allowance of cubic-air space for each man on the berth-deck is 203 feet. The vessel is ventilated by hatches and air-ports, and in warm weather with wind-sails. The ventilation and light on the berth-deck are very defective. The air-ports are fitted with the old-fashioned plunger dead-lights, and without artificial light it is a difficult matter to read at any time. On the gun-deck, where the boys are billeted, both ventilation and light are excellent.

There is no means of warming except by stoves, one on each deck, one in the cabin and ward-room, which are placed in position in winter and removed from the ship during the remainder of the year. In severe weather the stoves have proved inadequate to heat the ship. A steam condenser and heater would be a valuable and economical substitute, and would give much more room in the hold of the ship, as many of the water tanks, which occupy the greater part of the hold, could then be dispensed with.

There has been no trouble in procuring good water except at Newport, where the water sent off to the ship was rejected, containing a large amount of saline and organic matters.

The Navy ration of food supplied is of good quality. The large amount of strong coffee issued to the boys has been, I think, the cause of frequent cases of enuresis; this is especially noticed in boys soon after enlistment. The substitution of cocoa for coffee to be issued to the boys would be an improvement. Fresh provisions are issued three times a week while in port. I think in vessels on this duty a more frequent

issue of fresh provisions would be of manifest advantage to the health of the boys. An addition to the ration, of oat-meal, to be served out soon after "all hands" are called in the morning, would be desirable, as at present the time between meals is so badly divided that from four o'clock in the afternoon until eight o'clock in the morning they have no food, and have about three hours' work, fasting, before breakfast. Coffee is issued soon after turning out in the morning.

The clothing is made on board ship. Each boy on enlistment is furnished with an outfit made by the ship's tailors, and is afterwards expected to make all his own clothing; at first under instruction from the tailors. Until within the past few months rain clothing has not been issued to the boys. The number of bronchial troubles resulting from boat and other exposed duty has since been markedly reduced.

At sea in any weather the berth-deck is always damp from leaking dead-lights, and in heavy weather the gun-deck is wet, the gun-deck ports being old and badly fitting.

In the dispensary when at sea the dampness has been so great from constant leaking from the deck above and dead-light, that it has been with the greatest difficulty that the surgical instruments have been kept free from rust. Several rooms in the ward-room have also badly fitting dead-lights and are constantly damp. In addition to the unavoidable dampness, the covered decks are very frequently washed; the decks, being old, dry very slowly. There are no drying-stoves on board. A coat of shellac to the berth-deck would obviate this in a measure.

PORTSMOUTH.

The Portsmouth was employed the entire year as training-ship for apprentices of the Navy. During the first quarter she was in the port of New York 6 days, at Norfolk and Hampton Roads 79 days, and at sea 5. In the second quarter 5 days were spent at New London, 3 in Port Royal Bay, S. C., 42 at Norfolk and Hampton Roads, 8 at New York, and 33 at sea. In the third quarter, 54 days were occupied in various ports along the New England coast, 6 at Halifax, 10 in Hampton Roads, and 22 at sea. All the fourth quarter was spent inside the capes of the Chesapeake Bay. During the entire year 1879, this vessel was in port 305 days, and at sea 60 days.

In regard to the sanitary condition, the following brief extracts were taken from the report of Surgeon R. A. Marmion:

Since my assignment to the Portsmouth nothing has occurred requiring me either to originate sanitary recommendations or to review those made by my predecessor. As will be seen by referring to the quarterly report of sick, no epidemic influence of any kind has been at work on board. The average number of the ship's company during my connection with the ship has been two hundred, and the daily average of sick three and sixty-nine ninety-seconds ($3\frac{69}{92}$), with no deaths, no serious accidents, and but one transfer to the hospital. While, however, from the very late date of my assignment to the vessel, it is impracticable for me to make extended observations covering the year 1879, I beg to present for your consideration some recommendations of a sanitary nature, which I think are particularly opportune now that the ship is undergoing repairs. In making these recommendations I shall be guided by my experience in a vessel of this class under the most varying conditions.

Ventilation and lighting.—The Portsmouth is a gun-deck sloop carrying twelve broadside guns, and pierced for several more. The gun-deck is susceptible of the most thorough ventilation and lighting through the hatches and gun-ports, as at present arranged. This, however, is not true of the berth-deck, which is badly ventilated and insufficiently lighted. To remedy these defects I suggest for your consideration—

1st. A sky-light in the after part of the ward-room, in lieu of the hooded tube (about a foot in diameter) now in use, which is of questionable value for purposes of ventilation, and is absolutely useless for lighting purposes.

2d. I recommend most strongly that the berth-deck be fitted throughout with more air-ports, and everywhere with larger ones, with more convenient fastenings than those now in the ship. These latter are too small and too near the deck overhead to give sufficient light; and, moreover, being of the old-fashioned formidable plunger pattern, are so unwieldy as to deter any one from opening them except, perhaps, in port.

Heating.—As at present arranged the ship is heated by stoves, which my experience on ship-board warrants me in condemning, almost without qualification. Apart from the vitiation of the air and the dirt which their use entails, the danger from fire is a factor of sufficient importance to be considered. I respectfully recommend that the feasibility of a steam-heating apparatus in their stead be considered. This recom-

mendation has been made, I am informed, but action on it was postponed until this winter, when it was intended all questions of repairs, etc., should be considered.

Finally I beg leave to recommend that the question of fitting the Portsmouth with some means of furnishing an adequate supply of potable water be considered. The tank capacity of the ship is 20,000 gallons, which, under ordinary circumstances, it may be urged, is ample; still, extraordinary circumstances may, and my own experience in sailing vessels reminds me do, occur under which it is most desirable that a vessel of this kind should have within herself some resources for forestalling the possibility of disaster from want of a proper supply of water, whether in quantity or quality. With a full complement the Portsmouth musters about 300 persons, of whom 150 are apprentices. For this number experience has shown that 400 gallons of water per day is no more than a proper allowance, and yet at that rate our supply would last but 50 days. There are very few of our vessels which in a three years' cruise are not called upon to spend more than 50 consecutive days at sea. From the very nature of the duty in which this ship is now engaged it must be expected that she may be required to make long voyages, or that she may be cruising where circumstances render it unadvisable from sanitary reasons to get water from shore.

The size and equipment of the Portsmouth render her eminently fitted for the purpose of a "training ship," and, with the adoption of the improvements suggested, she will be made all that could be expected of a sea-going ship whose crew is composed so largely of persons of tender age.

WACHUSETT.

The Wachusett was employed all the second quarter and a portion of the third quarter, 1879, as a training ship for apprentices of the Navy. During the second quarter 10 days were spent at Boston, 5 at Pensacola, 3 at Vicksburg, Miss., and 13 at sea. In the third quarter 30 days were spent at Vicksburg and New Orleans, 2 at Key West, 39 at New York, Boston, and Portsmouth, and 21 at sea. During the entire period named, this vessel lay in port 89 days and was at sea 34 days.

SHENANDOAH.

The Shenandoah was commissioned September 8, 1879, and during the remainder of the third quarter lay at the New York navy-yard, after which she sailed for the South Atlantic station.

WABASH.

This vessel is employed as receiving ship at the navy-yard, Boston, in regard to which Surgeon J. H. Clark remarks:

During the past year two ports, one in each bow, have been cut in the sick-bay; each measuring 27 by 26 inches, and closed by a movable window. This adds materially to the light and ventilation of the bay.

As the atmospheric reports show, the average humidity in the ship is exceedingly low. This is due chiefly to the degree of steam heat required to make the ship comfortable in this climate, and partly to the roofing over the spar-deck.

I have nothing further to add to the previous sanitary reports from this vessel.

COLORADO AND VERMONT.

These vessels are employed as receiving ships at New York, and lie at the Cob Dock in near proximity. Surgeon G. R. Brush in his report says:

Both ships are well warmed by steam heating apparatus, and together afford more abundant air space than is usual on sea-going vessels. Water is furnished from the Ridgewood water-works, which supply the city of Brooklyn. Fresh, soft bread has been issued three, and fresh beef and vegetables four days of the week. There is nothing special to note under the head of clothing; that being made in the navy-yard, under direction of the Bureau of Provisions and Clothing, has not yet been issued on this vessel.

On the Cob Dock, a two-story frame building 85 by 28 feet furnishes in the upper story a well lighted, warmed, and ventilated hall, or reading-room, containing a respectable collection of books, magazines, and papers, the usefulness of which can hardly be overestimated. This hall is also used as a place of worship.

The ground floor furnishes a guard-room, a barber-shop, six bath-tubs, used by the various ships' messes in regular order, and ten cells, each containing a cubic-air space of 540 feet. These cells are rather dark, being entirely shut out from direct sunlight, and indifferently ventilated. A serious defect in this building is that the floor is too near the ground, rendering the cells objectionable, if not unfit, for the purpose of long confinement.

That part of the Cob Dock used by the Bureau of Equipment and Recruiting comprises perhaps an area of two acres of made land, the work of several years. It is elevated about 4 feet above tide-water. During the year about one-half of this surface has been regraded, converted into a well-made lawn, and reset with trees and shrubbery, adding much to the attractiveness, and probably to the salubrity of the locality. The remaining part is gradually assuming a similar appearance. Considering the oozy condition of the substratum and the perishable nature of the piling supporting this dock on the East River and the Wallabout Channel, its permanence is a matter of doubt.

Among the insanitary surroundings, mention is first to be made of the discharge of a large sewer into the comparatively still waters of the Wallabout Channel, and the consequent deposit of sewage matter, the decomposition of which gives rise to the development of gases that may be seen rising through the water in streams of bubbles even in cool weather.

A shallow slip, next to the one occupied by the Vermont, receives a part of this deposit, which, at low-water, is freely exposed to the air. Adjoining this slip is a mass of decaying planking and timber, the remains of an old boiler-wharf. The timber basin, with its muddy surface, exposed at low-water, presents an unsightly appearance, and during the summer months it is not unlikely that its exhalations may add something to the unhealthfulness of this locality.

Considerable portions of the Colorado and the Vermont are in a state of decay. The decks have required frequent wetting in order to prevent them from becoming open and leaky. Fresh water has been used for this purpose.

Both vessels rest on the muddy bottom at low-tide, and require to be pumped out almost daily. By constant attention the bilges have been kept very clean.

The forward part of the lower gun-deck of the Vermont is in use for the physical examination of recruits. It affords abundant space, is well ventilated and lighted, and is probably a place as convenient for this purpose as can be provided on board of a ship.

FRANKLIN.

This vessel serves the purpose of a receiving and recruiting ship at Norfolk, Va. Surgeon T. C. Walton states, in his sanitary report, that—

The Franklin lies moored in the Elizabeth River, off the navy-yard, at Gosport. Her complement of officers and men numbers 16 of the former, 88 of the latter, of whom 34 are colored, and 38 marines, making a total of 142 persons. This number is temporarily augmented from time to time by the crews of vessels undergoing repairs, &c., at the navy-yard and by recruits enlisted on board subject to draft for vessels in general service. During 1879 there were 211 recruits accepted out of 228 persons examined. The daily average of persons on board has been 200, of whom 160 were whites, and 40 negroes or colored.

The following shows the rate of sickness, transfers to hospital, and mortality for 1879, also, for comparison, for 1878 and 1877. The deaths, with one exception, occurred among those sent to hospital:

Year.	Number on board.	Admission on sick-list.		Number of sick-days.	Daily average of sick.	Transferred to hospital.		Number granted sick-leave.	Mortality.	
		Number.	Rate per 1,000.			Number.	Rate per 1,000.		Number of deaths.	Rate per 1,000.
1879	200	117	585	1,047	2.86	7	35	3	2	10
1878	190	118	621	1,366	3.07	11	57.9	.....	2	10.53
1877	155	115	741	1,116	3.05	17	110	.....	4	25.8

Of those admitted during the past year, 30 were cases of malarial fever, 13 of venereal, 10 of pulmonary, and 16 of digestive diseases. Trivial cases of sickness not necessitating being excused from duty are not included in the foregoing.

The present location of the ship is believed to be more insalubrious than one about 1,500 yards distant, off the naval hospital grounds, where the New Hampshire was at one time stationed. The advisability of having the ship located there, except during the winter months, has frequently been represented to the inspecting boards and navy-yard authorities, and approved by the former. There would be greater freedom from malarial influences in the latter locality.

As a recruiting station for colored servants, Norfolk possesses many advantages, also for seamen, both white and colored, particularly during winter when the shipment of cotton is progressing and many of the more northern ports are closed by ice. If at any time there should be extra and urgent demand for seamen, by publishing a notice of the requirement in Baltimore, any in that vicinity, desirous of entering the service, would readily find their way to Norfolk. Recruits often present themselves from that port, and some have stated they had walked the entire distance.

The Franklin is sufficiently well adapted for her present purpose; there is ample room for all on board and for every requirement for a receiving ship. She is kept scrupulously clean; prompt and zealous attention has been given to every sanitary suggestion; there has been no undue wetting of decks nor exposure of the crew, as the meteorological and sick reports will show. Medical Director Gihon, in his sanitary report for 1873, detailed the amount of cubic air space, means of ventilation, etc., in the vessel; should she ever again be commissioned for general service, his suggestion that the berth and orlop decks should be entirely re-arranged would imperatively demand attention, as with the steadily progressive views and methods of ventilating and lighting vessels, the sending to sea of this ship with a full crew, under the existing arrangement would be as discreditable to our country and civilization as it would be prejudicial to the health and lives of those subject to it. No immediate change in the disposition of the ship being anticipated, suggestions for improvement in ventilation, etc., are not offered.

SAINT LOUIS.

The Saint Louis lay at League Island, Pennsylvania, the entire year 1879.

NEW HAMPSHIRE.

This ship is located at Port Royal, S. C., and used as a receiving vessel. Surgeon B. H. Kidder remarks about her sanitary condition:

The position of this ship and the general conditions on board remain as reported in 1877. Epidemics of measles, mumps, and catarrh have occurred on board within the past year, but without serious consequences. Otherwise the health of the ship's company has been excellent. Nothing unusual or noteworthy has happened as regards the health of the inhabitants of the neighboring country.

IRON-CLADS.

The iron-clads Passaic, Wyandotte, and Montauk lay at Washington navy-yard the entire year 1879.

The iron-clads Lehigh, Ajax, Catskill, Manhattan, and Mahopac lay at Brandon, on the James River, the entire year.

The iron-clad Canonicus lay at New Orleans the first quarter and at Pensacola, Fla., during her commission of 56 days of the second quarter 1879.

The torpedo-boat Alarm lay at the Washington navy-yard a portion of the first quarter 1879, then proceeded to navy-yard New York, where she lay the remainder of the year.

COAST SURVEY.—The steamers Bache and Gedney are in the service of the United States Coast Survey; the former was employed the entire year 1879, and the latter the first, second, and third quarters thereof, along the North Atlantic coast from Maine to the Mississippi River. Complete data as to number of days in port and at sea are not furnished.

MEDICAL TOPOGRAPHY AND SANITARY REPORTS.

REPORT OF MEDICAL DIRECTOR W. T. HORD.

U. S. NAVAL HOSPITAL, CHELSEA, MASS.

The United States Naval Hospital grounds were purchased by the commissioners of hospitals on the 22d day of September, 1823, from Dr. Aaron Dexter, of Boston, for the sum of $18,000.

There were originally 115 acres in the tract. About 30 acres were transferred to the Ordnance Department for magazine, shell-houses, gunners' house, etc.; 10 acres were sold to the Treasury Department for the purpose of erecting a marine hospital, so that there remain about 75 acres.

This hospital was completed and occupied January 7, 1836. The right wing was added in 1865.

It is beautifully situated on the left bank of the Mystic River, and is the only naval hospital we possess on the Atlantic seaboard which is absolutely free from malarial poison. Patients suffering from this disease are sent from Pensacola, Norfolk, Washington, Philadelphia, and New York for treatment. During the war of the rebellion large numbers of men were sent here as a sanitarium.

Most of the cruising of government vessels is done within the tropics, and nearly all cases of sickness are complicated with malarial poison and can be more successfully treated at this than at any of the hospitals further south. It also supplies accommodation for the sick at the Portsmouth navy-yard, where there is no hospital, and cases likely to be sick a long time are consequently often sent here.

I have dwelt upon this subject as the people of Chelsea seem determined to obtain possession of the entire government property on this side of the Mystic River. They do not require the land because the natural growth of the town demands it, but they desire to tax the property to add to the revenues of the town, which is overwhelmed with debt ($19.80 taxes upon $1,000), and is so stagnant that "dead as Chelsea" has become a proverb. They suggest sending the invalids of the Navy to the marine hospital and the civil hospitals of Boston. It is to be hoped that the great Government of the United States will never farm out its sick and wounded officers and sailors to the lowest bidder as county towns do their paupers. The marine hospital, to which it is suggested to send them is unfit for the purpose, as is shown by the Supervising Surgeon-General, Dr. John M. Woodworth, who, in his annual report for 1875, page 9, says:

> The hospital building at Chelsea, port of Boston, cost originally $234,515. Since it was first occupied in 1860, there have been expended for repairs upon the building $109,000. This hospital, like all the old hospitals, was constructed on a very defective plan, and consequently its administration is difficult. The wards have poor ventilation, and insufficient light. The floors are of inferior material and not easily cleansed; the sewers are made to run under the building with cesspools in the passage way of the basement. Extensive repairs are now required, and to make such repairs and all necessary alterations would cost nearly, if not quite, as much as to erect two separate

vilion wards, which would be far preferable to expending the money on the present ilding, as it *cannot be made a good hospital.*

hole number of patients admitted during the year 1879 160
ily average of patients 24½
erage percentage of deaths ..... .031

HEATING.

The hospital is heated by high-pressure steam, which is more expensive than low pressure. The boilers are old and much worn, and will ave to be replaced at no distant day.

DRAINAGE.

The drainage from the hospital is excellent, as it is situated on the de of a steep hill, and all the surface drainage and the sewage of the spital empties into the Mystic River.

CLIMATOLOGY.

The climate of Boston is very variable in winter, the thermometer sing and falling 40° and 50° Fahr. in a few hours. The prevailing seases during the summer months are gastro-intestinal; during the nter months rheumatism, neuralgia, and inflammation of the lungs and r passages. The death reports of the city of Boston show that dur- g the winter and spring months the number of deaths from consump- on and inflammation of the lungs and air passages amounts to more than e-third of the total mortality, consumption being in large excess of y other disease at all seasons of the year. The wonderful prevalence typhoid fever in the country, and interior towns of New England, is used by the close proximity of the wells and water-closets. The climate so cold that the well which supplies the family with drinking water is der the kitchen, and the privy but a few feet from it.

The great prevalence of consumption in New England is, in my opinn, due to the meager diet that prevails in all classes of society—a holesome generous table being the exception, even among those who e in good circumstances.

The city of Boston is justly famed for its hospitals and other charitable stitutions. The Massachusetts General Hospital, City Hospital, and arney Hospital, are the three principal ones, while there is a host of inor charities.

REPORT OF SURGEON G. S. BEARDSLEY.

U. S. NAVY-YARD, NEW YORK.

The naval station at New York is situated on the southern shore of Vallabout Bay, an arm of the East River, and contains an area of 260 eres. It is contiguous to the city of Brooklyn on three sides, the line f junction being formed by Navy street, Flushing avenue, Navy lane, nd Kent Avenue basin. These boundaries, with the water-line of Wallbout Channel, include the naval hospital, naval laboratory, naval emetery, marine barracks, and the navy-yard proper. In addition here is an artificial island in Wallabout Bay, of 32 acres in extent, rmed from the ballast from ships, and refuse material from various

sources, which contains the buildings and grounds pertaining to the receiving-ship, the dock of the Ordnance Department, and residence of the gunner of the yard. The whole of this artificial island is known as the cob-dock, and that part of it immediately surrounding the ship of the United States ship Vermont was the supposed source of the fatal form of fever which occurred in July, 1878. As the hospital, laboratory, marine barracks, and receiving-ship have medical officers attached to them, these parts of the station are not considered in this report. The dividing line between the barracks and yard, extended to Wallabout Channel, may be assumed as the southeastern boundary of the yard, which line, with Flushing avenue, Navy street, and the water front, incloses an area of about 80 acres. At the time of its acquisition by the government, and for several years subsequently, about four-fifths of the present yard was marshy ground, a large part of which was covered with water at high tide, but by frequent additions of material the surface has been brought to its present elevation.

At the northwestern side is a small natural elevation of gravelly soil, about 30 feet above high-tide, on which stands the residence of the commandant. The remainder of the surface is low, averaging about 8 feet above high-tide, and gradually ascending towards the southeast until the machine-shop is reached, where it has an elevation of about 10 feet above high-water, the general surface of the yard being considerably lower than that of most parts of Brooklyn.

The soil of the yard is the result of an artificial formation extended through several years, and is made up of ashes from shops and ships, shavings and other refuse material, and ordinary earth from various sources, deposited on a foundation of alluvium and sand beds. In the small park in rear of the officers' quarters, the surface of which is 7 feet above high-tide, the level of the ground water in the dry season is 6 feet, while in wet seasons it is less than 3 feet below the surface. Owing to heavy rains, and doubtless to the rise and fall of the tide also, this water-level is subject to sudden and frequent fluctuations, and as a result there is maintained an excess of moisture in the soil. This moisture in a soil containing so much organic matter, slowly undergoing the process of decay, would seem to present conditions favorable to the generation of malaria; but if malaria is produced in this locality, which is not improbable, I am confident that its amount or intensity is very small, and certainly not sufficient to originate malarial fevers in persons of good constitutions under ordinary exposure.

The yard is well provided with sewers which empty into Wallabout Channel, and which, considering the impossibility of deep drainage (owing to the surface being so slightly elevated above high-water), fairly fulfill the purpose of their erection. They are made of a slightly porous cement; the main sewers are egg-shaped and have the ample diameters of 2 and 3 feet. In order to drain the more remote parts of the yard as deeply as possible, a low rate of inclination was adopted, viz, 1 to 480. This is not as great as is desirable, but, with the egg-shaped sewer, a very fair velocity is obtained. A short distance east of the dry dock is the terminus of the large Flushing Avenue sewer, which enters the yard near the south gate, and passes diagonally throughout it to its termination in Wallabout Channel. This sewer, which has a diameter of 7 feet, discharges a large amount of sewage into Wallabout Channel, a part of which is carried by the current directly past the water front of the yard, thus polluting the water, and the remainder subsides to the bottom, to be again brought up in the process of dredging. This sewer is very objectionable, on account of the proximity of its terminus

to the yard, from which, when the wind is from the eastward, the atmosphere of the yard is sensibly contaminated.

Near ship-house D is an old well, which furnishes water of a fair quality, though at times its taste is slightly brackish. As the well is only 300 feet from tide-water, and its depth extends below the line of high-tide, it is probable that the sea-water percolates through the soil and mixes with the water of the well. I am indebted to Medical Director Williams, of the naval laboratory, for the following analysis of the water, showing the amount of solid matter in a gallon:

Carbonate of lime	4.938
Chloride of sodium	9.250
Sulphate of lime, soda, and potash; carbonate of magnesia; silicates of soda and potash, and trace of iron	19.885
Total solids	34.073

This water has 8 degrees of hardness.

In 1855 a well was constructed near the main gate for the purpose of obtaining water for extinguishing fires. The well is 24 feet deep, is 900 feet from tide-water, and is capable of furnishing 100 gallons of water per minute. Dr. Williams has also furnished me with the following analysis of the water of this well:

Carbonate of lime	2.222
Chloride of sodium	1.234
Sulphate and phosphates of lime, of soda, and potash; carbonates of magnesia; silicates of soda and potash; trace of iron	1.482
Total solids	4.938

It has 3.6 degrees of hardness.

These wells are but little used at present, as the Ridgewood water from the Brooklyn water-works has been introduced into all parts of the yard. This water is collected from a natural drainage-basin on Long Island, which has an area of 60 square miles, and is composed of layers of fine sand of a uniform grain, beds of pebbles and gravel, with occasional local deposits of clay. These being very pervious, and at the same time very retentive of water, form an immense natural filter, the efficiency of which is shown in the excellent quality of water supplied.

In this basin are situated the six principal receiving ponds, at various distances from the reservoir—the one most remote, which is also the most important, being 12 miles distant.

These ponds have a combined area of 100 acres, a storage capacity of 57,000,000 gallons, and are capable of supplying 19,000,000 gallons daily. The water is conducted from them by covered circular brick conduits to the pump-well, from which it is pumped into the distributing-reservoir by three large pumping-engines. This reservoir has an area of 25½ acres; its bottom is 150 feet above high-water, and with a depth of 20 feet has a capacity of 161,000,000 gallons, or about one week's supply. This water is of exceptional purity, containing but a small amount of saline and organic matters, and has but three degrees of hardness. The following comparison of several water-supplies is not without interest:

	Solid contents, per gallon.
Brooklyn	2.64
Boston	3.57
Philadelphia	4.26
New York	6.65
Paris	9.80
London	28.00

The residences for officers are eight in number. The one occupied by the commandant is situated on the natural elevation near the main gate, and is an old-fashioned wooden structure, but in good repair, is roomy and commodious, and has convenient out-buildings, conservatory, and garden of good size, though the ornamental grounds are of limited extent. As its site is considerably elevated, its more important sanitary appliances are easily maintained in good condition. The residence of the gunner of the yard is a modest though comfortable brick house on the cob-dock, but its site is so low that the surface of the ground under the house is often covered with water to the depth of a foot at high tide.

There being no stationary wash bowls nor water-closets in the house, it has no house-drainage, all the refuse being deposited at a distance. Owing to the dampness of its site, it is far from satisfactory as a residence.

The remaining six residences are on Flushing avenue; three of them being separate structures; the other three are in one block. They are built of brick, are of good size, and convenient, are heated with high-pressure steam from the yard, and lighted with gas from the city of Brooklyn. They also have vegetable gardens, and small ornamental grounds. The internal arrangement of the bath-rooms, water-closets, and house-drains, however, is very defective, and shows a disregard of sanitary requirements which would be astonishing were it not so commonly met with. In the house of the medical officer of the yard, which, in a sanitary sense, is a little worse than any other, the following conditions exist: The bath room and water-closet are placed directly between the two principal sleeping rooms, without any opening to the external air, except a so-called ventilator leading from the ceiling to the roof. This ventilator is a shaft 16 by 22 inches, with a movable sash at the top, which can be opened and closed by means of a rope leading to the bath-room below. This would be more beneficial than it now is could an upward current of air through the shaft be maintained; but when the wind is from the south, the sash, presenting an inclined surface to the wind, directs a current of air downwards through the shaft. The effect of this is to diffuse through the two sleeping rooms the noxious gases and foul odors arising from the water-closet. Besides this, during heavy rains, it is necessary that the sash should be closed to prevent injury to ceiling and carpets. The defective condition of the house-pipes and drain renders matters still worse. The soil-pipe, instead of extending above the roof, with a free opening to the air, terminates in the third story, where its end is tightly closed. This pipe descends through the house to the basement and empties into the house-drain, which is connected with the large city sewer in Flushing avenue. This house-drain has no trap between the house and sewer, but it was originally provided with a flap trap or gate. These gates are probably useful when in good condition, but they are very liable to get out of order, when they become useless, and also tend to obstruct the outward flow of sewage. The house-drains have not been examined since the houses were completed fifteen years ago; and the prevalence of disagreeable odors and the occasional dripping of water under the bath-room indicate some material defect. There are no traps connected with the stationary wash-bowls, though a trap in the closet-pipe, which is presumably in good order, was evidently considered sufficient to prevent the return of sewer gas to the house. In the total absence of ventilation of the house-drain, the varying pressure of the air and the siphon action of the pipe constantly tend to render this entirely inefficient.

The redeeming features of the arrangement in the other houses are that, with two exceptions, the bath-rooms are not placed between sleeping rooms; with one exception they have a window opening to the ex-

nal air, and the house-drains are partially ventilated through the l-pipe, the end of which opens above the roof. These features are uable in themselves, but are not sufficient. In addition, all outflow es of stationary wash-bowls should be trapped, each house-drain uld be trapped and ventilated, and the whole system of house pipes l drains should be frequently inspected, and their efficiency tested.

)uring the past year my attention has been directed to six cases of ht impairment of health, in which the chief symptoms were loss of etite, long-continued nausea with occasional vomiting, dull head- e, and general malaise. All these cases occurred in the persons of ales who spent much of their time in the house. All occurred in three houses in which the drainage was defective. Three of them urred in the house in which the drainage was most defective, and all)vered their normal condition of health by an absence of a few days n the yard, but only to experience the same feelings soon after their irn. These were cases of impaired health, which had no good reason their existence, as they were easily preventable, and in two of the ee houses have been greatly benefited by only a partial removal of cause. This was effected in one house by removing a broken pipe,)ugh which the earth around it had become saturated with offensive age, and supplying a new one. In the other house a new soil-pipe s supplied, and extended above the roof with a free opening in place the old one, which was broken in such a way as to admit of the es- e of sewer-gas into the house. In the third house the house pipes now being examined with the intention of remedying whatever de- s may be discovered.

Excepting the six cases mentioned above, the general health of the idents (of which the average number is forty-eight) has been about good as that of the officers and their families who reside outside of yard, and probably as good as that of the residents of Brooklyn in milar condition in life, and this in spite of the unfavorable location l defective drainage of the houses on Flushing avenue. There have n but few cases of illness, and none of a serious character. Catarrhal l rheumatic affections are ordinarily common in the winter; but the mer of 1879 passed without illness of any kind.

For several years past the officers' quarters have had the reputation being very unhealthy; and from what I have learned of the former itary condition of the yard, I believe that such a reputation was not ustly acquired. But, under the direction of the present command- , many improvements have been made, among which the following y be mentioned as having a directly beneficial effect upon the sani- y condition of the yard and dwellings: About 1,000 yards of new l large sewer pipes have been laid, which has materially reduced the ount of moisture in the soil. Low and consequently wet tracts have n drained and filled, for which about ten thousand cubic yards of an and natural earth have been obtained without expense to the gov- ment. The streets of the yard have been extensively paved, mostly h Belgian pavement. Most of the side walks have been paved, and eral parks have been laid out. About 1,000 shade trees have been nted, and old heaps of refuse and decaying material have been oved.

When, in addition to these improvements, a reasonably perfect system house drainage shall be secured, the surface of the ground under the ses cemented, and the space under the basements ventilated, the althfulness of the quarters will compare very favorably with that of ses situated in any part of Brooklyn having so slight an elevation ove tide-water.

REPORT OF MEDICAL DIRECTOR ALBERT L. GIHON.

U. S. NAVAL ACADEMY, ANNAPOLIS, MD.

I have in previous reports so fully discussed the sanitary conditions of this station, that little remains for me to do beyond referring to the movement of disease during the past year, and repeating such recommendations of former years as have not yet been adopted.

Table A exhibits the character and amount of sickness during the year ended December 31, 1879. The majority of the cases were trivial, and incident to the personal imprudences and accidents which occur to young men everywhere. More than 80 per cent. consisted of miasmatic complaints, nervous diseases, chiefly neuralgia and headache, catarrhal affections of the respiratory tract, and disorders of the digestive system from errors in diet and disturbed function of the liver.

TABLE A.

Admissions to sick-list during the year 1879.

ZYMOTIC DISEASES, [141.]	
Miasmatic diseases, [124.]	
Catarrhus epidemicus	36
Erysipelas	2
Febricula	5
Febris intermittens	74
Febris remittens	1
Pertussis	2
Vaccinia	4
Enthetic diseases, [13.]	
Gonorrhœa	10
Syphilis primitiva	1
Syphilis consecutiva	2
Dietic diseases, [4.]	
Alcoholismus	4
CONSTITUTIONAL DISEASES, [43.]	
Diathetic diseases, [248.]	
Adynamia	9
Podagra	1
Rheumatismus acutus	8
Rheumatismus chronicus	6
Rheumatismus sub-acutus	13
Lumbago	2
Myalgia	7
Torticollis	2
PARASITIC DISEASES, [1.]	
Scabies	1
LOCAL DISEASES, [784.]	
Diseases of the nervous system, [227.]	
Cephalalgia	199
Mania	1
Nausea	6
Neuralgia	17
Pleurodynia	4
Diseases of the eye, [55.]	
Asthenopia	5
Conjunctivitis	25
Hordeolum	3
Iritis	3
Ophthalmia catarrhalis	18
Ulcus corneæ	1
Diseases of the ear, [8.]	
Otalgia	5
Otitis	1
Otorrhœa	2
Diseases of the teeth, [16.]	
Odontalgia	16
Diseases of the circulatory system, [7.]	
Lymphangitis	1
Syncope	3
Vertigo	3
Diseases of the respiratory system, [160.]	
Asthma	1
Bronchitis acuta	9
Bronchitis chronica	1
Catarrhus nasalis	4
Catarrhus bronchiorum	132
Epistaxis	1
Hæmoptysis	2
Laryngitis	1
Phthisis pneumonica chronica	6
Pneumonia	3
Diseases of the digestive system, [256.]	
Cholera morbus	10
Colica	61
Congestio hepatis	1
Constipatio	15
Diarrhœa acuta	77
Diarrhœa chronica	2
Dysenteria acuta	2
Dysenteria chronica	2
Dyspepsia	9
Fauces ulcerosæ	2
Hæmorrhois	1
Pharyngitis	16
Stomatitis	1
Tonsillitis	25
Vomitus	1
Diseases of the urinary and genital systems, [7.]	
Cystitis	2
Orchitis	1
Urethræ stricturæ	4

TABLE A—Continued.

Admissions to sick-list during the year 1879—Continued.

...eases of the locomotive system, [1.]	
s.....	1
...ses of the integumentary system, [49.]	
ss.....	15
.....	2
.....	1
.....	3
hus.....	17
.....	1
.....	2
his.....	2
.....	1
.....	2
involutis.....	2
s.....	1

VIOLENT DISEASES, [90.]	
Wounds, injuries, and accidents, [90.]	
Abrasio.....	6
Ambustio.....	2
Contusio.....	37
Explosio.....	1
Fractura.....	2
Luxatio.....	4
Stremma.....	16
Vulnus contusum.....	5
Vulnus incisum.....	5
Vulnus laceratum.....	5
Vulnus punctum.....	5
Vulnus sclopetarium.....	1
Vulnus venenatum.....	1
Total admissions, 1879.....	1,064

le B represents a summary of the cases of disease which have been led and treated by the medical officers annually during the past ears, and the total of all such cases which have occurred since the ization of the Naval Academy, in 1845.

withstanding insalubrious climatic conditions, attention to sanita- hough not perfect, has resulted in a rate of mortality exceptionally

There have been but fifty-four deaths in the period of thirty- ears from 1845 to 1880, and, eleven of these having been caused by nts, only forty-three consequently resulted from disease, an annual f less than two per thousand of population.

TABLE B.

Summary of cases of disease treated, annually, since 1875, and total of all such cases since the organization of the academy in 1845.

Classification of diseases.	1875.		1876.		1877.		1878.		1879.		1845–1880. [Fatal cases in brackets.]	
Class I.—ZYMOTIC DISEASES		77		87		144		159		141		3,018 [161]
Order 1.—Miasmatic diseases	62		77		124		144		124		2,741 [151]	
Order 2.—Enthetic diseases	5		5		10		10		13		198	
Order 3.—Dietic diseases	10		5		10		5		4		79	
Class II.—CONSTITUTIONAL DISEASES		25		45		39		38		48		939 [3]
Order 1.—Diathetic diseases	25		44		39		38		48		936 [3]	
Order 2.—Developmental diseases												
Order 3.—Tubercular diseases			1								3	
Class III.—PARASITIC DISEASES		1						2		1		68
Class IV.—LOCAL DISEASES		775		661		710		657		784		15,616 [25]
Order 1.—Diseases of the nervous system	139		90		215		179		227		2,9 0 [3]	
Order 2.—Diseases of the eyes	21		12		17		22		55		697	
Order 3.—Diseases of the ears (and nose)	9		7		4		5		6		161	
Order 4.—Diseases of the teeth	3		1		7		21		16		140	
Order 5.—Diseases of the circulatory system	3		1		8		8		7		70	
Order 6.—Diseases of the respiratory system	285		304		149		62		160		4,052 [19]	
Order 7.—Diseases of the digestive system	276		209		247		300		256		6,319 [3]	
Order 8.—Diseases of the genito-urinary system	2		5		4		8		7		110	
Order 9.—Diseases of the locomotive system	1		1		9		5		1		33	
Order 10.—Diseases of the integumentary system	36		31		50		47		49		1,134	
Class V.—NON-MALIGNANT TUMORS						1						16
Class VI.—WOUNDS, INJURIES, AND ACCIDENTS		96		54		128		146		90		1,809 [11]
Total	974		847		1,022		1,022		1,004		21,466 [54]	

Many of the causes of disease in cities and other communities do not ere exist. There are spacious apartments in detached buildings, which re kept scrupulously clean, and from which and about which every ind of refuse is promptly removed. All the dwellings are well lighted nd heated, and front upon extensive wooded lawns. There is an bundant supply of pure water and good food and excellent facilities for athing. A rigid quarantine is maintained against communicable dis-ases, and acute affections come under the cognizance of the medical fficers in their incipiency. Notwithstanding this, a number of cases of phoid fever, of which three were fatal, have appeared since 1865, indi-ating defective sewerage. In certain conditions of tide and wind the posed outlets of the sewers have, through imperfect traps and insuffi-ent vents, permitted the return of sewer-gas into the dwellings, some-mes recognizable by the smell, especially when the houses have been osed at night. For this reason I advised a survey of the grounds with view to the improvement of the sewerage, and I regret that I have not en able to accompany these reports with a contour map as a basis for e re-arrangement of the lines of drainage.

The removal of the water-closets into balconies projecting beyond the ain walls of the buildings, with soil-pipes entirely outside and windows rmitting their perfect ventilation, was experimentally begun at the det hospital with such satisfactory results that the same system was troduced into the suites of apartments known as the "corrals," and bsequently into the quarters of the commandant of cadets. I have, cordingly, recommended that exterior water-closets shall be attached all the other quarters, where equal need exists for the change.

The use of steam causes most of the houses to be over-heated, and oper attention is seldom paid to keeping the evaporating pans filled. he introduction of a board six inches wide beneath the lower sashes of e windows in the cadets' apartments, causing the upper end of this sh to overlap the bottom of the upper sash leaving a space between em for the injection of cold air into the room above the heads of its mates, has been so satisfactory that I have advised its general adop-on in offices and dwellings.

I have also renewed my recommendation for the substitution of lat-ced for solid doors in cadets' rooms, as has been already done in the det hospital, to permit the equalization of the temperature of the oms, their better ventilation, and the increase of their air space by e practical addition of the area of the halls and corridors. An ad-itional advantage of this arrangement will be that it will make clan-estine study by dim lights after hours, and the habit of assembling te at nights for eating and drinking bouts more difficult. To prevent y pretense of necessity for reading after ten o'clock, which has had such disastrous effect upon the eye-sight in several instances, I have recom-ended that cadets who wish to study shall be permitted to rise for is purpose as early in the morning as they may desire, and have in-sted that the utmost vigilance shall be exercised that they do not ave their beds after "taps." The tolerated "feeds" and "spreads" indigestible sweetmeats, preserves, nuts, etc., which are sent by pa-nts and friends, and are eaten at night after study hours, invariably sult in a large increase of the sick-list after occasions of this sort, and e responsible for much subsequent illness and deficiency in studies.

A recent death, from disease of the heart, of a cadet graduated from is school, who while here had the ambition to excel in athletic feats, calls numerous other instances of leading gymnasts, who, since leav-

ing the school, have rapidly failed in health I have, consequently, suggested the propriety of restraining the cadets from more than moderate exercise at the gymnasium, under the direction of the instructor.

Unquestionably, the most important matter in the health history of the students at this academy is that relating to the use of *tobacco*, and I have urged upon the superintendent, as my last official utterance, before leaving this institution, with which I have been so long and so pleasantly associated, the fact, of the truth of which five years' experience as health officer of this station has satisfied me, that beyond all other things the future health and usefulness of the lads educated at this school require the absolute interdiction of tobacco. (For my previous reports on this subject, see "Hygienic and Medical Reports, United States Navy," vol. IV, pp. 832–836, 896–7.) In this opinion I have been sustained not only by all my colleagues, but by all other sanitarians in military and civil life* whose views I have been able to learn, while I know it to be the belief of the officer who is to succeed me in the charge of this department,† and who was one of the board of medical officers which, in 1875, reported "that the regulations against the use of tobacco in any form can not be too stringent." Since then, three successive annual boards of visitors, to wit, the board of 1877, of which Commodore J. W. A. Nicholson was president, the board of 1878, of which Rear Admiral John L. Worden was president, and the board of 1879, of which Commodore T. H. Stevens was president, have indorsed the prohibition of tobacco "as a wise sanitary provision," and the last of these boards, on being informed that the regulation against its use was not then in operation, June 10, 1879, emphatically recommended that "its strict enforcement be at once restored."

[It is pertinent to introduce in this connection the following expression of opinion by the board of visitors to the United States Military Academy at West Point for the year 1880:

The board have learned with surprise and regret that the cadets are permitted the use of tobacco. The regulations of the United States Naval Academy at Annapolis prohibit its use in any form as a wise sanitary provision, and the board would most respectfully urge the strict enforcement of the same sensible regulation at the Military Academy, as in its judgment the laws against the use of tobacco, whether by smoking or otherwise, cannot be too stringent.

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*Prof. Richard H. McSherry, President of the Baltimore Academy of Medicine, in his recent work (published by D. Appleton and Co., New York, 1879) on "Health and how to promote it," states on p. 178, "That tobacco is injurious to growing boys, especially to school boys, is a subject *not open to discussion*. The medical officers of the Naval Academy, in the subjoined report [report of December 2, 1875, quoted above], but express the general sentiment of the profession in regard to a matter of such great importance in school hygiene."

†Showing that my confidence in this matter was justified, I append the following extract from the letter of Medical Inspector Gorgas to the superintendent, embodying recommendations to be presented to the board of visitors for the year 1880, which the delay in the publication of my report enables me to quote:

"The foulness of some of the rooms occupied by the cadets, observed by the inspecting officer, upon his nightly visits, and by the medical officers on occasions of sickness, is largely due to the habit of smoking tolerated in the Academy, and which I would respectfully recommend to be forbidden.

"In addition to the foulness to which it contributes, and which, I think, accounts to some extent for the numerous cases of headache, gastric disorder, and vague trivial disturbances which enlarge our sick lists, I believe the use of tobacco by the cadets induces difficulty of concentrating the mind upon study and defective muscular coordinative power. The professor of drawing informs me that he has observed among the smokers an impaired power of muscular control, which has retarded their progress and proficiency in his branch. I think most of the officers of this institution agree with me in regarding the use of tobacco by the cadets as injurious, and as being *more in vogue than when it was forbidden by the regulations.*

After such an indorsement it is more than ever a matter of regret that the Naval Academy had already receded from the advanced position it had assumed and so successfully maintained, that superintendents and instructors of military, civil, and naval apprentice schools, were strenuously endeavoring to accomplish the same results in the establishments under their charge.

With a sense of the serious responsibility which devolves upon the sanitary officer of this establishment, conscious that the bodily welfare and happiness of these young men and of their future offspring may be permanently influenced by this vicious indulgence, I have most earnestly advised that the strongest efforts of the authorities of the Academy shall be directed towards the prevention of this pernicious, indefensible, and wholly unnecessary habit.

Permit me to instance a few physiological facts as evidence that this is something more than mere opinion:

The effect of tobacco on the minute vessels at the termination of the arterial circuit is to cause contraction of them as a primary fact, resulting in impaired nutrition, especially of the nerve centers. (Richardson.)

By causing irregularity in the supply of blood it degrades tissue. (Axon.)

There is no doubt that it predisposes to neuralgia, vertigo, indigestion, and other affections of the nervous, circulatory, and digestive organs. (Hammond.)

It lessens the natural appetite, more or less impairs digestion, and induces constipation; while it irritates the mouth and throat, rendering it habitually congested, and destroying the purity of the voice. It induces an habitual sense of uneasiness and nervousness, with epigastric sinking or tension, palpitation, hypochondriasis, neuralgia, and frequent urination. Chewing and snuffing tend to cause gastralgia, but smoking neuralgia of the fifth pair. (Stillé.)

"By the continued excitation of the optic nerve tobacco produces amaurosis," a fact demonstrated by Wordsworth, Mackenzie, Hutchinson, Sichel, and Chisholm. The latter states in his report "On the poisonous effects of tobacco on the eyesight," that in the past few years he had treated thirty-five cases of amaurosis directly traceable to the use of tobacco by smoking in every case but one.

It renders the vision weak and uncertain, causing objects to appear nebulous, or creates muscae volitantes and similar subjective phenomena. In numerous instances it has produced amaurosis. Similar derangements of hearing occur, with buzzing, ringing, etc., in the ears, and even hallucinations of this sense. (Stillé.)

When the sight fails with smokers and no appreciable change of structure can be found in the eye, tobacco poisoning may be assumed. The assumption is converted into certainty by the fact that appropriate remedies fail entirely while the habit of smoking is continued. In rare cases the susceptibility is so great that the smoking of a single cigar a day will produce it. (McSherry.)

I have, myself, several times rejected candidates for admission into the Academy, on account of defective vision, who confessed to the premature use of tobacco—one of these from the age of seven.

The defective muscular co-ordination occasioned by this drug is remarkably illustrated by the fact, which I learn from Professor Oliver, head of the department of drawing, that he can invariably recognize the user of tobacco by his tremulous hand in manipulating the pencil, and by his "absolute inability to draw a clean, straight line."

Tobacco-smoking often causes an intermittent pulse. Out of eighty-one smokers examined, twenty-three presented an intermittent pulse, independent of any cardiac lesion. This intermittency disappeared when the habit of smoking was abandoned. Among children from nine to fifteen years of age, smoking undoubtedly caused palpitation, intermittent pulse, and chloro-anœmia. (Decaisne.)

The irregularity in the heart's action, which tobacco causes, is one of its most conspicuous effects. Candidates are annually rejected for

cardiac disturbances, who have subsequently admitted the use of tobacco, and the annual physical examinations of cadets reveal a large number of irritable hearts ("tobacco hearts") among boys, who had no such trouble when they entered the school. Among the applicants for enlistment as apprentices in the Navy, during the year 1879, ten in a thousand were rejected for functional lesions of the heart, indicating tobacco poisoning. "The most prominent cause of rejection," reports Dr. Magruder, medical examiner, "has been from irritable heart, found most frequently in boys with abnormally developed sexual organs or who use tobacco to excess. In fact, I have met with no cases of this affection that could not be attributed to the use of tobacco or to masturbation.

The latter vice is itself the consequence of the sexual erethism induced through its effects upon the nervous system by this narcotic, which smoked in the shape of cigarettes is a reputed aphrodisiac. The pernicious effect of tobacco on the generative function is authoritatively asserted by Acton ("On the Reproductive Organs"), who declares "I am quite sure that excessive smokers, if very young, *never acquire*, and, if older, *rapidly lose their normal virile powers*."

Finally, the antidotal effect of tobacco makes drinking of stimulating liquors the natural consequence of smoking. The lad who is encouraged to smoke tobacco is perforce taught to drink rum, and the ingenuity he will exercise to gratify this implanted craving, despite regulations, will far exceed in persistence, because impelled by the imperious demand of perverted function, that which he would primarily have exerted in conquering his natural repugnance for tobacco had it been the interdicted vice. Decaisne found in the examinations already alluded to of children under fifteen, many of them older than cadets, whom I have known to be inveterate smokers, that "they furthermore became dull, lazy, and *predisposed to the use of alcoholic drinks*."

Among those persons who are total abstainers from alcohol few are found who can bear tobacco in the most moderate use of it. When we see a man smoking and drinking, quaffing off the cup of wine or of spirit to quiet the qualms which would otherwise be inflicted by the fumes of the cigar or pipe, we really observe the fact of a most excellently though innocently devised physiological experiment upon a living animal. The man is unconsciously, unless he be a physiologist, inducing a balance in the tension of his arterial circuit. In the end the nutrition of the organic parts, which are under the influence of the same nervous regulation, is sure to suffer, and in many organizations to suffer fatally and rapidly (Richardson).

A youth of fourteen smoked fifteen cents' worth of tobacco for toothache, fell down senseless, and died the same day (Druhen).

A medical student, aged twenty-two, after smoking a single pipe, fell into a frightful state, the heart became nearly motionless, the chest was constricted, breathing painful, limbs contracted, pupils insensible, one contracted the other dilated, and these symptoms lasted four days (Blatin).

While it is, indisputably, the fact that a large number of the cadets have learned to smoke before their admission into the Academy, its compulsory inhibition during their academic career will be of incalculable benefit to them, as well as to all others, who now, unfortunately, acquire the habit here through the example of their schoolmates. It is almost impossible for the cadet, however young—and some enter at fourteen—to avoid contracting the habit if his room-mate indulges, and the extent of this indulgence was instanced by one of the officers in charge, who told me that some of the rooms were so foul and offensive from tobacco smoke that it was unpleasant to enter them. The medical officer of the day not long ago was called late at night to attend a cadet in a state of extreme prostration induced by tobacco, and although himself a smoker, he declared the atmosphere of the room to be repulsively stifling from tobacco smoke. I have seen youths fresh from graduation from this

school go on board ship smoking rank, blackened pipes, that would have nauseated many an adult. That they can do this without harm no physiologist will believe; that they should be permitted to acquire such a habit during their school-life no sanitarian will admit.

That so many adults use tobacco with apparent impunity, or even admitted benefit, is no argument in favor of its use by growing lads, for while tobacco by arresting molecular waste of tissue in the mature man may help to maintain the integrity of the organism, in the adolescent this very effect is detrimental, since it retards that progressive cell change upon which the advanced development of the body depends. Dr. Richardson emphasizes the statement that "the *young* should specially avoid the habit. It gives a doubtful pleasure for a certain penalty. Less destructive than alcohol, it induces various nervous changes, some of which pass into organic modifications of function." Aside from this effect on the nutrition, the adult smoker must be conscious that tobacco is not an aid but an obstacle to mental application, and it was actually found in the *École Polytechnique*—

That a comparison made between the smokers and non-smokers showed that the non smokers took the highest rank in every grade, and, further, that the smokers continually lost grade, and in 1861 the minister of public instruction of France accordingly issued a circular forbidding the use of tobacco by pupils in the public schools.

That the user of tobacco is incapable of concentrated mental effort is demonstrated by the fact told me by a member of the academic board, that cadets have complained of their inability to apply themselves to study and attain the class standing they desired on account of the excessive smoking in their rooms, in which they were compelled to indulge.

Stillé and Maisch in the National Dispensatory, which has appeared during the present year, and is the latest authority on the action of drugs, state with reference to the cerebral effects of the habitual use of tobacco:

Often there is a feeling of a rush of blood to the head, with vertigo, and impairment of attention so as to prevent continuous mental effort; the mind is also apt to be filled with crude and groundless fancies, leading to self-distrust and melancholy. The sleep is frequently restless and disturbed by distressing dreams. It impairs muscular power and co-ordination, probably both, by interfering with nutrition and by exhausting nervous force, and usually keeps down the growth of muscle and the deposit of fat. Doubtless there are many persons who use tobacco in one or more forms who experience few or none of these evils, and whose constitutions seem proof against its mischievous effects; but to the greater number the habitual use of it is more injurious than useful, and it acts upon a certain number in almost all doses as a poison.

An agent that has mischievously been represented to be innocuous only because of the remarkable tolerance exhibited by a few individuals, and is actually capable of such potent evil; which, through its sedative effect upon the circulation, creates a thirst for alcoholic stimulation; which, by its depressing and disturbing effect upon the nerve centers, increases sexual propensities and induces secret practices, while permanently imperiling virile power; which determines functional disease of the heart; which impairs vision, blunts the memory, and interferes with mental effort and application, ought, in my opinion as a sanitary officer, at whatever cost of vigilance, to be rigorously interdicted. It is undoubtedly true that many will be impelled by their desire for this indulgence to gratify themselves, and resort to injurious and dishonorable means to evade the regulations against smoking, but equal ingenuity and want of principle are shown by the youth in his desire to obtain liberty and license in evading the regulations against "frenching," and by him who, through negligence, incapacity, or other cause, is deficient in

class standing, in evading the regulations against "gouging," and by him who seeks to bully the plebe in evading the regulations against "hazing;" but the difficulty of restraining smoking should be no more valid excuse for its tolerance, in the face of sanitary objections of such magnitude, than for the toleration of frenching or gouging or hazing. The use of stimulating liquors is forbidden, but that the regulation prohibiting it is evaded is shown by the empty whisky bottles which are picked up outside the cadets' quarters; but it is not proposed to allow drinking on this account, although, as a sanitary fact, a half-pint of table claret or of beer would be a wiser indulgence than the cigar, or the innumerable cigarettes, which latter, there is good reason to believe, cause injury to the health from other agents than the mere tobacco which they may contain.

I have dwelt at such length upon this topic, feeling assured that I shall have done no act of greater good to this school, in the success of which I have so profound an interest, than if I can succeed in saving its pupils from the impairment of health which is sure to result from the unrestrained premature use of tobacco.

REPORT OF SURGEON THOMAS C. WALTON.

U. S. RECEIVING SHIP NEW HAMPSHIRE, NORFOLK, VA.

Norfolk is located in 36° 51′ north latitude, 76° 19′ west longitude, on low, nearly level land, on the east side of the Elizabeth River. The mean level of the city is variously estimated at from 4 feet to 12 feet above mean tide-water. The tidal variation is about 3 feet. There is no topographical map of the place in existence. It is expected one will shortly be made, as an appropriation for that purpose has recently been granted by the city council. Several shallow tidal water-courses, or creeks, extend through portions of the city to the river; in their vicinity the land is quite low, in some places below high-water level. A large part of the city is built on "made land"—that is, soil from higher land. Oyster shells, ships' ballast, dredgings, &c., have been used to fill in portions of the creeks and the low land over which the tides flowed.

These tidal streams constitute about all the drainage the city posesses. A few sewers from private dwellings empty into them, and a portion of the superficial drainage of the streets is carried off by them. They are open, without proper banks, and in some little or no water flows at low tide. From them emanate obnoxious and poisonous material, of greater or less amount and degree, throughout the year.

The streets generally run in a north-and-south and east-and-west direction; few of them, if any, have been graded with a view to efficient drainage. Much of the waste water from dwellings flows into the gutters of the streets, and a large portion of it cannot reach tide-water, but forms stagnant collections in numerous places along the course of nearly every street, remaining there until evaporated or absorbed. About two-thirds of the streets are paved with cobble or block stone, a few are shelled, and the remainder, chiefly in the negro quarter, are merely imperfectly graded. The latter not only receive the waste water but a large portion of the garbage of their locality.

This description is intended to indicate the necessity of, and the difficulty in, devising an efficient system of drainage and sewerage. Many of the ablest minds in the place are exercised upon this subject, and, as

a first step towards attaining it, the grant, already alluded to, for a topographical survey has been made. It has been suggested that the Coast Survey Service could be very advantageously employed in making the survey, as most of the adjacent country has already been surveyed by its officers, and several of our cities have received such aid from that service.

I have been unable to find a reliable account of the geological formation of the land upon which Norfolk is situated. Dr. William Selden very kindly gave me the following as his recollection of the strata met with, about forty years ago, in boring a well to the depth of 100 feet, at the head of Market Square:

Superficial soil, vegetable detritus, &c., a few inches.

Clay mixed with a little sand, about 7 feet.

Quicksand, from 12 to 20 feet.

Marl, firm and dry, composed chiefly of oyster-shells, about 30 feet.

Decomposed marl, loose and interrupted at distances of 7 or 8 feet by strata of sand and gravel a foot or more in depth, the latter becoming coarser with the increase of depth, assuming the size of bowlders at the lowest point reached. Besides oyster-shells, nut-shells and other remains of vegetation were found in the loose marl, indicating a marked subsidence of the land.

The quicksand alluded to is taken advantage of by a few persons as a means of sewerage, they having the pits of their water-closets sunk through the over-lying clay; it is said these pits have never required emptying, though in use many years. Most of the water-closet pits, however, extend but a foot or two into the clay; they are subject to being flooded by heavy rains and their contents washed over their sides. After the severe storm that visited the city in August last, the stench from that cause was very perceptible almost throughout the entire extent of the negro quarter, also in many other more pretentious localities, reminding one forcibly of the slums of Rio de Janeirio and Naples after nightfall, in their odoriferous days. Excrementitious matter is, I believe, often washed out on the surface of the yards and even the streets, there remaining until removed by absorption and evaporation. An attempt is being made to supplant the pits with boxes or other receptacles placed on the surface of the ground. The streets, cellars, and out-premises generally are subject to inspection under direction of the board of health. Night-soil is removed by a "deodorizing company," and garbage, which is directed to be placed in receptacles on the streets, is removed two or three times weekly, in carts, to a "dumping ground" about a mile outside of the city limits. The chain gang is employed in street-cleaning, also hired laborers on urgent occasions, so that ordinarily a fair state of cleanliness of the streets is maintained, the marked exceptions being some of the lanes near the river and most of the unpaved streets in the negro quarter.

Owing to the prevalence of yellow fever in the country, there were special house-to-house inspections by the police during the past two years. The result of these, particularly the first one, should indicate the necessity for an annual repetition of them during the prevalence of cold weather. Another good sanitary measure would be the frequent flushing of the street gutters with water from the hydrants, at least twice a week during the summer. This is seldom done, it may be for fear of disturbing the remains of the bath-room and chamber slops that disgrace the gutters fronting more than one of the best residences.

The water-supply for Norfolk was obtained previous to 1873 from cisterns, where rain-water was collected, and from wells. In August of

that year water was introduced from Lake Lawson by a water-works system; since then the wells have nearly all been closed; the water from most of them was very hard, probably contained much organic matter, and was often brackish. The water supplied from Lake Lawson is known as "city water"; it is gradually being brought into general use, the number of takers increasing about 300 annually; at present there are about 2,200. Less than half of the population use it for drinking. Many persons having it on their premises continue drinking cistern water on account of its greater purity, though during the dry season of the past year their number was considerably diminished.

The city water is pumped, without filtration, from Lake Lawson to two "settling reservoirs" 2¼ miles distant, and from them to the city, a distance of about 4½ miles. There are about 750,000 gallons daily pumped into the city. The reservoirs have a capacity of about 8,000,000 gallons.

Lake Lawson is situated nearly midway between Norfolk and the mouth of Lynn Haven River; it formerly constituted a part of the headwater of "Little Creek," a tide-water stream that has its outlet in or near Lynn Haven Bay. About one hundred years ago a dam was constructed across one of the branches of Little Creek for milling purposes, and a lake was thereby formed, since named after the constructor and proprietor, Lawson, though it has also been known as Cole's Pond, after another owner. It extends over about 85 acres, and is said to have a capacity of 120,000,000 gallons, which could easily be increased. Its banks are somewhat abrupt and rise from 4 to 10 feet above its surface. The adjacent land consists chiefly of sand and gravel; it is generally low and level, though broken in places. Most of it is covered with trees, underbrush, shrubs, &c., which in the immediate vicinity are being slowly cleared away. At the southeast border of the west end of the lake is a cultivated field of the "Cole's farm;" it might be a source of contamination from the fertilizers that are probably annually spread upon it. The rest of the adjacent land is uncleared. The lake is the receptacle of the surface water of only a small extent of country, owing to the proximity of other streams; it is fed, however, by numerous springs of excellent water; it contains a large number of fish, and its shores are infested by rats and other animals. It has never been thoroughly cleaned, but contains much of the vegetable and animal débris of its vicinage that has been accumulating in it for many years. The water has, however, been generally considered good. An analysis was made of it prior to its introduction into Norfolk by Mr. P. B. Wilson, analytical chemist of Baltimore.

The following is from his report:

Quantitative analysis of water from Cole's Pond.

Color.—Colorless, having a slight amount of organic matter in suspension.
Reaction.—Feebly acid from carbonic acid.
Specific gravity, 1.00016.
Solid contents, by direct evaporation, 3.262802 grains in a gallon.

The solids contained:

	Grains.		Grains.
Silica	233.702000	Sulphate of lime	.114228
Sesquioxide of iron	.037713	Chloride of sodium	1.238572
Alumina	.023700	Chloride of potassium	.140411
Carbonate of lime	.412741	Organic matter	.172230
Carbonate of magnesia	.338221	Carbonic acid	.549994

Mr. Wilson recommended the water as wholesome and pleasant, and stated that much of the solid matter could be removed by filtration.

This water has been quite frequently supplied to the receiving ship, and other naval vessels; and, previous to the latter part of the past

nmer, no cause for complaint was found with it; at that period it s found to rapidly acquire an offensive odor after reception on board; fact, it was not altogether free from it before receival. During Oc- er, a number of cases of diarrhea occurred on board the receiving p, that were believed to be directly traceable to its use; on board er vessels like results were observed, and its use condemned. I ited and carefully examined the sources of supply, and had several cimens of the water examined, with such unsatisfactory results re- ding its potability that I recommended the discontinuance of its ; and it has not since then been received on board our naval vessels. As the mortality rate at Norfolk was unusually great at that time, I med it my duty to communicate to the board of health the result of operations, and addressed to its members the following letter:

NORFOLK, VA., *November* 5, 1879.

he Board of Health, Norfolk, Va.:

ENTLEMEN: My attention has recently been directed to the condition of the water lished by the Norfolk City water-works. Owing to the extremely bad condition hat supplied our naval vessels, it is no longer received on board the receiving and other vessels at the navy-yard for drinking purposes. I have visited the ces of supply of this water, and have had specimens from Lake Lawson and the rvoir examined, chemically and microscopically, with the following results, viz:

lysis, by Wanklyn's method, of water obtained from Lake Lawson, November 2, 1879.

ee ammonia, a trace in 1,000,000 parts.
buminoid ammonia, .48 part in 1,000,000 parts.
lorine, .7 grain in 1 gallon.

Water obtained from reservoir near Princess Anne road, November 2, 1879.

ee ammonia, .02 part in 1,000,000 parts.
buminoid ammonia, .56 part in 1,000,000 parts.
lorine, 1.56 grains in 1 gallon.

Microscopical examination of water from Lake Lawson, November 2, 1879.

antities of decaying vegetable tissue.
mbs, wings, hairs, scales, &c., of animal origin.
a in considerable masses.
ins and leaves, fibers of various kinds (vegetable), and masses of broken-down s and cells.

Water from reservoir, of same date as above.

rge masses of broken-down tissue (vegetable), fibers of leaves, &c.
all cells in large masses, probably ova.
aces of animal remains, probably belonging to insects, &c.
both specimens a remarkable absence of any recent or fresh vegetable matter, and y animal life, such as is usually found in fresh water.
a specimen of reservoir water obtained on the 30th ultimo were found large quan- s of oil globules, probably from the machinery. These examinations were con- ed chiefly by Drs. Byrnes and Nourse, of the Navy, gentlemen who have made work a specialty. I can vouch for their correctness and for the fairness of the les examined.
cording to the best authorities, water containing one-fourth the amount of albu- id ammonia that is in Norfolk City water should be condemned as unfit for use. klyn states that "much albuminoid ammonia, little free ammonia, and an almost e absence of chlorides, is indicative of vegetable contamination," and is exempli- by Lake Lawson water. "Such water is very injurious to health." Again, in rd to the method of analysis adopted. "The analytical character as brought out he ammonia process is very distinctive of good and bad waters, and is quite un- akable. There is, indeed, hardly any branch of chemical analysis in which the ator is less exposed to the risk of failure."
believe that most of the contamination (albuminoid ammonia) in our city water vegetable orgin, though the excess of this ammonia and of chlorine in the water

from the reservoir over that from the lake is probably temporary and of an animal nature, derived from the oyster-shells recently spread over the banks of the reservoir.

I believe that a continued use of this water will be highly prejudicial to health, and will be likely to produce many of the diseases of paludal and septic origin, such as typhoid fever, diphtheria, diarrhœa, etc.

I would suggest that the water be filtered before entering the reservoir, and, if practicable, after leaving it, through properly-arranged strata of sand and charcoal. That the filthy habit of spreading fresh oyster-shells around the reservoir be discontinued, and that those recently laid there be removed. If the shells were well charred, so as to destroy all adherent organic matter, they might then be used beneficially.

Greater care should also be exercised to prevent oil from the machinery from contaminating the water. Then, if the water continued impure, both lake and reservoir should be cleansed.

Very respectfully, etc.

The board of health thereupon transmitted specimens of water obtained from Lake Lawson, the reservoir, and a city tap to Professor Mallett, of the University of Virginia, with a request for their analysis and his opinion as to their potability, but without explanation concerning their source, etc. The following is a copy of his reply:

UNIVERSITY OF VIRGINIA, *December* 4, 1879.

DEAR SIR: Your letter of 27th ultimo was received some three or four days ago, and since then I have finished my examination, which had been going on during our correspondence, of the specimens of water sent me.

All three specimens, as received, were clear, with the exception of a slight flocculent sediment at the bottom of each bottle. There was no color to be seen in a stratum six inches deep of any one of the waters. On opening the bottles there was a very faint odor perceptible, but not more than almost any other water will acquire after remaining for a number of days in a corked bottle not quite filled.

Microscopic examination showed in each case (particularly in water from the bottom of the bottles) the presence of some bacteria, some of the simpler forms of infusoria, minute confervoid growths, and fragments of indefinite shapes of organic matter—the *débris* of larger structures, chiefly vegetable. The total residue left on evaporation of the water amounted to—mark C, 5.92; mark L, 6.10; mark R, 5.65 grains per imperial gallon. For this very small figure for total solid matter it is needless to make any special examination in regard to "hardness"—all these waters are necessarily to be classed soft. The chlorine present was found—mark C, .79; mark L, .83; mark R, .84 grains per gallon. This is not excessive in relation to the amount of total solids. Using Wanklyn's process and nomenclature, the "free ammonia" was found to be—mark C, .127; mark L, .112; mark R, .102 parts per million; and the so-called "albumenoid ammonia," mark C, .147; mark L, .204; mark R, .196 parts in a million.

Both these sets of results taken separately, and the aggregate of both are higher than they should be for thoroughly good drinking water. The "free ammonia" bears a higher ratio to the "albuminoid ammonia" than is usual. This may possibly arise from the fact that the samples of water have been kept so long, pending our correspondence, delayed by the loss of one of my letters in the mail. Nitrites are not present, and nitrates only in very small quantity. No poisonous metals are detectable, at any rate, with such quantity of water as the samples sent supplied. On the whole, therefore, no objection appears to these waters, except the amount of nitrogen found as ammonia, and presumed to be, mainly at least, of organic origin. Although this amount does not pass the limits occasionally reached in the water supply of some large cities, generally considered to be furnished with water of satisfactory character, it is certainly beyond the range of results obtained from the best natural waters, and calls for serious attention. Wanklyn's process is by no means free from objections, but, when carefully carried out, its defects tend rather to make water appear better than it is in fact, instead of worse; and, although I would hesitate to depend upon it alone in pronouncing a water safe and good, or in drawing fine distinctions between waters of nearly the same character, it affords, when giving such results as those now under notice, ample ground for suggesting sanitary precautions. These samples of water have, as is above remarked, been kept on hand rather too long, but under such circumstances as to prevent any possible increase of contamination, so that on this ground also the conclusion reached is not vitiated. If the result had been the other way I would have requested you to send me fresh samples.

At the same time it is to be observed that some waters, notably those from peaty districts, yield large amounts of "albuminoid ammonia," and yet are not unwholesome. The proper conclusion in the case before us is that the water of which you have sent me samples is suspicious, not necessarily bad. It is desirable that the source of any organic contamination be carefully looked for, and if possible cut off.

Without seeing the locality from whence your water supply comes, and examining its surroundings, I can offer no more detailed suggestions on this head. And, as you have not informed me of the meaning of the marks upon the bottles, I cannot draw any conclusions from the individual results as to the different samples. They are, however, very much alike, no really important points of distinction. I must, of course, assume that due care was taken in the collection of the samples; that the bottles were thoroughly clean, &c.

I am, sir, your obedient servant,

J. W. MALLETT.

B. P. LOYALL, Esq.,
Secretary of the Board of Health, Norfolk, Va.

Mark C refers to water from a city hydrant, L from Lake Lawson, and R from the reservoir.

At the last meeting in 1879 of the board of health, the correspondence with Professor Mallett was directed to be referred to the city water commissioners, with the recommendation that Lake Lawson be cleaned, and its water filtered before using.

Since the specimens were obtained for Professor Mallett, Drs. Penrose and Gravatt, of the United States Naval Hospital, have examined the water by the "ammonia process," and have kindly furnished me with the following as showing the results they obtained:

Analysis of Norfolk water.

Date.	Locality.	Chlorine, grains per imperial gallon.	Alkaline carbonates, grains per imperial gallon.	Free ammonia, parts per million.	Albuminoid ammonia, parts per million.	Total hardness.
1879.						°
Nov. 13	Lake Lawson	1.96	1.5	.02	.14	.7
Dec. 12	..... do	1.49	2.	.022	.376	.....
Nov. 13	Reservoir	1.49	3.	.004	.262	1.4
Dec. 12	.....do	1.98	2.5	.013	.254	.....
Nov. 14	Tap on Market Square (steadily running)	1.74	.....	.006	.334	.....
Dec. 13	.....do	1.74	2.	.04	.344	.....
Nov. 14	Ordinary tap	1.98	2.	.003	.35	.4
Dec. 13	.....do	1.60	2.	.032	.358	.....

The difference in these analyses, I think, can be accounted for. The first specimens examined were obtained a few weeks after the occurrence of a violent storm that carried a very large quantity of vegetable matter into the lake, also shortly after recent oyster-shells had been placed on the banks of the reservoir, and during a prolonged drought. The water at this time may have been near its worst condition and likely to improve. Specimens obtained a week later, November 2, showed a marked improvement. (The result of the first examination is not given, as its correctness was doubted.) The specimens sent Professor Mallett were collected about two weeks later still, and, owing to the delay he alludes to, were probably not examined until two or three weeks afterwards, as is indicated by the excess of "free ammonia" and diminution of "albuminoid ammonia," also the presence of bacteria in them. Drs. Penrose and Gravatt's analyses probably very closely indicate the present condition of the water. If the recommendations of the board of health are properly carried out, I believe the water will be made perfectly potable and will compare favorably with that supplied most of our cities.

It is impossible to state what amount of organic matter of purely vegetable origin is allowable in potable water; the determining quality is probably the exact nature and condition of the impurity. After the city

water was condemned for use on the receiving ship, a supply was obtained from the Dismal Swamp, in the vicinity of Lake Drummond, on account of its general reputation for potability; and, although known to contain a large quantity of vegetable matter, its use has been continued to the present time without appreciable deleterious effect upon any one drinking it. Drs. Penrose and Gravatt examined a specimen of it for me with the following result: Lake Drummond water, examined December 13, yielded 4.22 grains chlorine per imperial gallon; 1.5 grains alkaline carbonates per imperial gallon; traces of free ammonia; .564 parts albuminoid ammonia per million. Total hardness, 0.7; total solids, 20 grains per imperial gallon.

To what degree the city water has contributed to the mortality rate of Norfolk it is impossible to determine; it may be next in importance after the lack of sewerage. A third important factor of this rate for the past year, I believe, will be found in the meteorological data which are herewith presented, as obtained from the published records of the Signal Service observer.

Meteorological record of Norfolk, 1878 and 1879.

Time.	Barometer.				Thermometer.				Humidity.				Wind.	Rainfall.
	Mean.	Max.	Min.	Range.	Mean.	Max.	Min.	Range.	Mean.	Max.	Min.	Range.	Prevailing direction.	Inches.
1878, January	30.08	30.72	29.38	1.34	40.4	62	18	44	77.6	100	40.7	59.3	N.	6.02
1879, January	30.12	30.57	29.40	1.16	37.53	71	8	63	71.50	100	32	68	S. W.	3.28
1878, February	29.98	30.34	29.44	.89	44.2	70	29	41	75	100	32	68	N.	2.66
1879, February	30.11	30.71	29.60	1.11	38.9	70	22	48	62.7	100	45.3	54.7	N. E.	2.75
1878, March	30.01	30.47	29.25	1.21	53.8	78	30	48	67.2	100	27	73	S.	1.21
1879, March	30.05	30.73	29.35	1.38	49.3	79	29	50	71.2	93	47	46	N. E.	4.29
1878, April	29.84	30.23	29.33	.92	60	86	42	44	67.75	100	25	75	S. W.	4.36
1879, April	29.97	30.45	29.48	.97	56.3	86	28	58	64.1	100	18	82	S. W.	2.15
1878, May	29.97	30.24	29.67	.57	66.2	89	44	45	68.6	100	26	74	S.	6.01
1879, May	30.08	30.43	29.79	.64	65.7	96	48	48	67.3	100	31	69	S., N. E	2.68
1878, June	29.91	30.20	29.57	.62	71.6	97	56	41	68.9	100	55	45	S.	5.13
1879, June	30.02	30.30	29.61	.68	75.9	96	55	41	60.3	100	28	72	S. W.	5.37
1878, July	30	30.20	29.67	.53	81.94	101	66	35	67.61	100	39	61	S. W.	2.02
1879, July	30.02	30.33	29.63	.70	78.9	102	61	41	67.4	95	28	67	S. W.	3.08
1878, August	29.94	30.19	29.73	.45	78.3	98	63	35	75.4	93.3	62.3	31	S.	9.95
1879, August	29.99	30.26	29.24	1.01	75.7	96	60	36	74.3	100	42	58	S. W.	7.79
1878, September	30.12	30.40	29.68	.72	72.56	93	57	36	70.43	100	50	50	N. E.	2.25
1879, September	30.13	30.40	29.80	.59	69	90	51	39	66.9	100	40	60	N. E.	3.77
1878, October	30.08	30.39	29.35	1.04	60.86	81	43	38	70.16	100	30	70	N. E.	5.03
1879, October	30.19	30.76	29.63	1.13	64.9	87	37	50	74.4	100	32	68	S.	.25
1878, November	30.03	30.50	29.10	1.40	50.47	71	34	37	73.82	100	37	63	S. W.	3.13
1879, November	30.21	30.59	29.65	.93	50.6	80	21	59	63.7	100	28	72	S.	.42
1878, December	30.07	30.55	28.89	1.65	39.2	65	18	47	72.2	100	55	45	W.	4.59
1879, December	30.18	30.53	29.70	.83	50.2	73	29	44	76.2	100	34	66	S.	2.34
1878	29.91	[1]30.72	[2]29.10	1.62	59.5	[5]101	[6]18	83	.....	100	25	75	.....	51.87
1879	30	[2]30.76	[4]29.24	1.52	55	[5]102	[7] 8	94	.....	100	18	82	.....	35.88

[1] In January. [2] In October. [3] In November. [4] In August. [5] In July. [6] In January and December. [7] In January.

From the foregoing may be observed the continued lowness of temperature during the winter of 1878–'79; the cold was more intense and prolonged than in any winter since 1856–'57. The lateness of appearance and decrease in number of mosquitoes and other insects common to this locality were observed, and no doubt the emanations from the low and semi-submerged lands were in consequence considerably increased. A more important fact to be noted, however, is the comparatively small rain-fall; that of 1878 is slightly below the average of several years; that of 1879 is nearly 16 inches less. The subsoil or surface water level was lowered from April until December, except temporarily in August, when sufficient rain fell to again augment the increased

ludal emanations. We have yet to learn the precise part a prolonged bsidence of the surface water level plays in pathogenesis.

The *mortality rate* of Norfolk has, as already mentioned, been excep- nally high during the past year. Through the kindness of Dr. Galt, e city health officer, I have been enabled to collect material for the lowing statistics from the records in his office. It is necessary to mise them with the statement that previous to 1876 they are only proximately correct; after the early part of that year they are as near ng absolutely so as it is possible to make them, owing to strict en- cement of the regulation requiring burial permits. In their consid- tion the date of the introduction of water from Lake Lawson into city, August, 1873, should also be noticed.

The population is estimated at 19,500 in 1870—11,750 whites, 7,750 cks—as increasing at the rate of 500 yearly, and retaining the same portion of 4,000 excess of whites over blacks, so that in 1879 the pulation would be 24,000—whites 14,000, blacks 10,000. The annual rease may at present be slightly in excess of that given, and the ating population may cause some variation in the total, but after con- ting with several authorities this is believed to be as nearly correct estimate as is possible to make, short of an actual count.

Report of mortality in the city of Norfolk from 1870 *to* 1879, *inclusive.*

Year.	Number of deaths.	Rate per 1000.	Whites, rate per 1000.	Blacks, rate per 1000.
	440	22.56	.....	.....
	559	27.95	.....	.....
	689	33.60	.....	.....
	614	29.23	.....	.....
	554	25.76	.....	.....
	504	22.90	.....	.....
	502	22.31	17.72	27.78
	568	24.70	16.74	34.42
	506	21.53	15.70	31.88
	754	31.41	23.42	42.60

Among the foregoing were 40 deaths of persons over 90 years of age, 3 between 80 and 90, 253 between 70 and 80, 359 between 2 and 5, and 936 of children under 2 years of age.

The chief causes of this mortality and number of deaths from each e herewith tabulated.

Year.	Diphtheria.	Typhoid fever.	Malarial fevers.	Phthisis.	Dysentery, diarrhœa, and cholera infantum.	Pneumonia.
(first six months)	.....	5	1	35	10	47
(last six months)	4	7	20	36	21	8
	1	13	45	88	75	50
	3	15	26	70	115	34
	16	11	30	71	61	35
	13	5	18	51	54	36
	11	14	23	65	45	40
	7	12	25	89	74	70
	5	5	37	71	44	49
	18	15	45	85	93	73

These statistics show that ordinarily Norfolk is a healthful city; that its climate is remarkably favorable to the decline of life; that since the introduction of city water there has not been an increase of mortality, except last year. There would seem to have been a diminution when the fact is considered that it is only since about March, 1876, we have good evidence of all deaths being recorded; and that during the past year the mortality has been unusually great.

The incompleteness of the disease statistics for 1870 and 1871 interferes with the deductions that might be made from them. It appears from them that the mortality from diphtheria and malarial fevers has slightly increased, and that from the other diseases mentioned has not appreciably changed. During 1879 the mortality from all ordinary diseases was increased; there seems to have been a general lowering of vitality. The death rate among whites was not great, except by comparison with preceding years, but among negroes it was alarmingly so. The causes of this high death rate have, I think, in a great measure been indicated. The climatic influences and probably exceptionally impure condition of the city water were peculiar to the year. The soil pollution, from lack of sewerage, &c., has of course been steadily increasing, and will continue to do so until remedied. Its evil effects extend throughout the entire community, but are most marked, because greatest in degree, among the colored population. The greater mortality among the latter over the whites is not so much on account of difference in physique as of their wretched mode of living. They do not allow themselves sufficient air space in their sleeping apartments; they are too much crowded; their dwellings and surroundings are generally of the most wretched description. Many of them are a disgrace to their proprietors and to the city in which they exist. They are hot and badly ventilated in summer, and in winter afford but an apology for protection from inclement weather; and nearly at all times their surroundings are more or less filthy. In addition, there is poor food and insufficient clothing to account for the frequency of pulmonary and zymotic diseases; a cause can also be found for the many diseases of digestion in the choice diet of the negro and his appetite.

The regulations concerning tenement construction and inspection in force in New York might with great benefit be enacted and enforced in Norfolk.

My investigations have not extended sufficiently to authorize the positive statement that the increased mortality rate was peculiar to Norfolk and did not extend to Portsmouth and the adjoining suburbs; the difficulty in obtaining reliable information on the subject is almost insurmountable. There has been no increase of sickness on board of the receiving ship; on the contrary, as this report shows, there were fewer admissions to the sick-list, fewer transfers to hospital, and a less number of deaths in 1879 than in the two preceding years. Of course 200 is too small a number upon which to base general conclusions regarding a much larger community.

The *sanitary system* of Norfolk embraces a board of health, health officer, sanitary inspector, alms-house, and pest-house. There is also an inspector of streets.

The board of health consists of five members, appointed annually by the city council; its meetings are also attended by the health officer and inspectors. The work of the members is entirely gratuitous, and, considering its nature and extent, is better performed than such thankless labor often is in other communities. The regulations of the National Board of Health have not been adopted by this board; their importance,

I presume, has not been sufficiently impressed upon the minds of its members. The regulations of the Norfolk board are, however, comprehensive enough to protect the public health, ordinarily, if they were rigidly enforced. The advisability of adopting the former regulations is not questioned; on the contrary, it has been frequently recommended.

The health officer is also physician to the alms-house; his duties do not embrace marine quarantine; his remuneration is very small for the work required of him.

The sanitary inspector is an assistant to the health officer; his duties consist chiefly of inspecting premises.

The street inspector is under the control of the street commissioners; he attends to the streets.

The alms-house has about 100 inmates, chiefly aged and decrepid, of both sexes and colors.

The pest-house is being reconstructed; it has had no inmates for some time. Its location appears to be sufficiently isolated for the purpose intended.

The *quarantine service* of Norfolk is efficiently performed, as the freedom of the city from yellow fever for so many years, though a frequent visitor in its waters, will attest.

The necessity for a quarantine station and its appurtenances for Hampton Roads and the Chesapeake has for some time, I learn, been occupying the attention of the National Board of Health. My views regarding a suitable location have been furnished the department, in the report of a board appointed to examine the neighborhood of Lynn Haven Bay, &c., of which I was a member. They were also expressed to the president of the National Board during his visit here. Since then I have found no reason to change them—believing that Sewell's Point is the most practicable place for the quarantine station.

I have recently been informed by a gentlemen residing in the vicinity that during the severe gale of August last vessels rode through it safely, at anchor, in Lynn Haven Bay. A farther inspection of that locality, with a view to the practicability of securing a safe anchorage and easy access to shipping, might be made, though I am very doubtful of its success. The hospital site selected there is an excellent one, and it is now possible that the "right of way" direct to Norfolk might be obtained.

The length of this report precludes more than the mere mention of the admirable hospital in Norfolk, under the charge of Sisters of Charity; also of the various charitable institutions and associations, sectarian and otherwise, that abound in the place. All of them speak well of the goodness and care for the public weal of a people barely recovered from the sore trials to which they were subjected during our civil war.

REPORT OF SURGEON MICHAEL BRADLEY.

U. S. NAVY-YARD, PORTSMOUTH, VA.

Norfolk navy-yard. the furthest south of the Atlantic naval stations, is situated on the left bank of the southern branch of the Elizabeth River, distant thirteen miles from Fortress Monroe. The title the yard bears, and by which it is officially and familiarly known in naval circles, is a misnomer, situated on the river obliquely opposite to and distant from the city of Norfolk two miles. It is sometimes called the Ports-

mouth (Va.) yard, and again more rarely, but with greater propriety, the Gosport navy-yard, the little town of Gosport being just outside its walls. Referring to names, the same misapplication extends to the yard at Kittery, Me., better known as the Portsmouth, N. H.; that of Charlestown the Boston; the Brooklyn, generally called the New York, and the station at League Island the Philadelphia yard.

The form of the yard is that of a right-angle triangle; length of north front or base, 1,175 feet; of the shore wall on west side, 3,700 feet; of river front, or hypotenuse of triangle, 3,850 feet; approximate number of acres, 82½. The ground thus inclosed is partly dry, spongy, and marshy, and the southern part is alternately covered and exposed by the rising and falling of the tide.

The misasmatic spots in the yard are—

1st. The granite inclined beds and foundations of the old ship and frigate houses destroyed by fire in the early part of the late war. These are covered with slime and sediment when the tide recedes, and consist largely of vegetable matter, while animal matter, oysters, and shell-fish, adhering to the granite walls and in a state of constant decomposition, emit emanations deleterious to health and obnoxious to the senses.

2d. The Timber Basin, a large dock walled with granite and cement, and provided with gates to permit of the ingress and egress of water, and used for stowing timber, submerging it, and preserving the same from changes of temperature, dry rot, and the ravages of the wood louse (milliped), and other destructive insects and worms. The water in this dock is slightly brackish, less dense than that of the river, freshened by rain, and the surrounding surface water running into it.

Frequently in midsummer, owing to evaporation and scarcity of rain, the water in the basin becomes so low that the timber is exposed, covered with decaying vegetable matter (sometimes with animal, as fish), as well as new fungous growths, weeds (*fucus*), and lavers (*ulva*); these acted upon by the sun generate vapors, which, mingling with the gases bubbling up from the stagnant water beneath, constitute miasma. To obviate such a nuisance, and for the preservation of health, it becomes necessary to open the gates of the basin, admit the salt water of the river, and submerge the timber, at the same time running the risk of introducing the *teredo* or Spanish worm, a testaceous mollusk that bores and penetrates, and so destroys, submerged wood.

3d. Water-soaked wooden wharves and platforms resting on barnacle-incrusted piling.

4th. The dry-dock, granite bed and altars covered with sediment, seaweed, and barnacles, scraped from the bottoms of vessels when in dock. The offensive matter, when not removed before docking a ship, gives rise to emanations detrimental, if not positively hurtful, to the health of those who are obliged to remain with the ship while in dock. Frequently the sediment can be covered with a few inches of water, and thus for a short time interfere with or prevent the formation of noxious gases.

5th. The main sewer, of terra cotta piping, twelve inches in diameter, runs parallel with the west wall. This sewer receives the surface water from part of the yard, and the urine only from the accommodation back of the barrack, and discharges into the river at the end of the west wall. The drain being but a few inches below the surface, and furnished with vent holes, the foul air readily escapes if the openings are permitted to remain uncovered.

6th. The further end of the yard is low and marshy, the ground is *made, and,* being of this character, the river, backed by easterly winds,

frequently overflows the spongy bank, while the porous earth rapidly absorbs the rain, only to give it back again heavily charged with miasm. Near this locality the main sewer empties its contents into the river, and the adjacent decaying timber and water-soaked piling assist in contaminating the atmosphere.

In close proximity to this unhealthy and consequently undesirable location the marine barracks is situated.

The barracks are a one story wooden structure resting on brick pillars two feet above the ground. The building is 131 feet long by 35 feet wide, divided longitudinally by a partition, on one side of which are the mess-room, kitchen, two store rooms, and three offices. The other side is used as the sleeping apartment. It runs the whole length of the building, and its dimensions are 130 by 20 feet, height 16 feet.

As the accommodations of the barracks are for 100 men it will be readily seen, by the given measurements of the sleeping apartment, that to each man is allotted only 416 cubic feet of atmospheric space, when he should have, as found by experience, at least 500 feet, with frequent renewals of wholesome air. This difference of quantity, however, would not materially affect the health of the sleepers in summer and early autumn in a healthy location; but here, with windows and doors all open, the exhaled poisonous carbonic-acid gas is not replaced or even adulterated by healthy and vitalizing atmospheric air, but simply substituted for miasmatic effluvia, and the consequences are a large sick-list and an inefficient guard.

The fevers peculiar to this climate are of the intermittent and remittent varieties. Occasionally, and dependent upon the severity of the season, congestive chills, bilious remittent, pernicious and malignant fevers, probably exaggerated forms of the same disease, require to be combated with active measures. Yellow fever, that scourge of the South, is no stranger to this locality, and the ravages of the epidemic of 1855 are sadly remembered by the inhabitants of Norfolk and Portsmouth.

Malarial cases readily yield for the time to treatment, but the frequently recurring attacks soon enervate and dishearten the most robust and best disposed patient, who is then hurried off to the hospital to remain for weeks or months; when restored to proper condition he is returned to his old quarters, where, if it be summer or autumn, he is again exposed and again manifests the effects of malarial poison. In the mean time the inefficiency of the marine guard is shown daily by diminishing numbers.

The climate of this station is variable, the temperature ranging during the year from a few degrees below the freezing point to blood heat. Easterly winds are humid, tempered by the heat of the Gulf Stream, and frequently accompanied by fogs—not the conditions for phthisical invalids. The westerly winds are generally dry and usually indicate clearing-up weather. Those coming from the north in winter, sweeping as they do down the Chesapeake, are cold, damp, and therefore unsuited to pulmonic, rheumatic, and neuralgic patients. The southerly winds prevail after sunset in summer, and hot sultry days are thus converted into cool and refreshing evenings. On the whole, this district cannot be considered a desirable sanitarium.

REPORT OF SURGEON JAMES S. KNIGHT.

U. S. S. MICHIGAN.

CHICAGO is situated on the southwestern shore of Lake Michigan, and is built on both sides of the Chicago River, on what was originally a low, sandy marsh. The adjacent country is low, flat prairie.

The harbor formed by the breakwater, about half of which is completed, is quite commodious for vessels of light draft.

The city has a population of about 500,000, who are noted for their hospitality, "goaheadativeness" in business, always driving and never being driven by it, and also for their cosmopolitan habits. It is divided into three parts, North, South, and West, by the river of the same name, a small stream, into which all the sewage matter of the city is emptied. There is so little motion to its waters, save that occasioned by the winds, that it may be said to be stagnant, and the waters have become so fouled and the stench so great that the board of health and other authorities are much exercised as to what is best to be done to remedy it.

There is considerable malaria along its banks, and diarrhœa, dysentery, malarial and other low forms of fever prevail, developed by the poisonous exhalations arising from the large amount of decomposing organic matter constantly accumulating at the bottom of the stream.

The water for the city is taken from the lake, about three miles from the shore, and about two miles to the northward of the mouth of the river. When the wind is from the shore the impure river water is blown far out into the lake, endangering the purity of the city supply. When the wind is from the northward the foul water from the mouth of the river is blown directly into the harbor, which makes it unfit to be used for any purpose.

High winds and sudden changes of temperature prevail, and the days during the summer are warm, but the nights are usually cool. This applies to all points along the shores of the great lakes.

MILWAUKEE is situated on the west bank of Lake Michigan, and is built on both sides of the river of the same name, which divides it into three districts, East, West, and South divisions. It is the principal port and the most populous city in the State.

Milwaukee is located about 90 miles north of Chicago, and has about 125,000 inhabitants.

That part of the city east of the river on the high bluff bordering on the lake is regularly laid out, and contains many handsome and commodious residences, with beautiful grounds filled with shade trees and shrubbery, and there are also many attractive public buildings.

There is a gradual descent from this part of the city to the river, and the atmosphere cannot be otherwise than salubrious and healthful.

A considerable portion of that part of the city on the west and south sides of the river is built upon made land, and possesses none of the picturesqueness of the eastern portion, until that part bordering on the suburbs is reached, where there are many splendid and expensive residences to be seen.

Into the almost stagnant waters of the river all the sewers of the city empty; also all the refuse matter of the gas-works, and other kindred sources of filth. On both sides, as it is ascended, unsightly privies every few rods are to be seen projecting over its banks.

It is easy to prevent foul matter getting into a river, but it is impossible to get it out after it has been allowed to enter. Why they ever allowed the water of that stream to become so fouled by carrying the sewage matter and filth of the city into it is not easily accounted for. Its condition now is somewhat similar to that of many of the streets and dwellings in England in the time of the Stuarts which gave such groundwork for the fructifying of the plagues which existed in those days. It is evident, though, from their present alarm, that there cannot be that belief in the "sanctity" of filth that existed in those days, which induced the monks to follow the recommendations of the early fathers, who pointed with pride to the filthy habits of the hermits.

It must not be inferred that I intend to cast any reflection upon the personal cleanliness of the good people of Milwaukee, but I do wish, with emphasis, to call attention to that public cess-pool about which I am writing; for filth, whether fostered in public or private, is destructive to human life. Before the germs of disease now fertilizing in that future pest-producer in their beautiful city have had time to cause any widespread destruction of human life in their midst, the alarm has been sounded by the health authorities, which the newspapers have taken up with a forcible earnestness worthy of the age in which we live, and they have invited suggestions, plans, propositions—anything practical and effectual—for the purification of its waters. They are fully alive to the fact that cleanliness and pure water are the beginning and the end of all public hygiene.

The unpleasant, unhealthful, and poisonous odor arising from the river, intensified by every disturbance of its waters, has so poisoned the atmosphere in the immediate vicinity that the city authorities are quite as much puzzled as they are in Chicago as to how they can remedy the evil. Chills, diarrhœa, dysentery, and low forms of fever prevail along the banks of the river, caused undoubtedly by the poisonous exhalations arising from its polluted waters. The solid portions necessarily sink to the bottom, and the accumulation is incessant, for the reason that the current is not sufficient to carry it off, and decomposition is constantly going on.

Sewage matter has a strong affinity for oxygen, which it largely absorbs from the water into which it enters, and quantities of gases of a poisonous nature are thus generated, large volumes of which are liberated by the agitation or motion of the whole or a portion of the stream in which they are imprisoned, as evidenced by our olfactories when on or near moving vessels.

The city is supplied with water from Lake Michigan, obtained at a point about half a mile from shore, and two miles above the mouth of the river. It has been recently ascertained, although the only motion given to the water of the river is that caused by the wind, that water taken from the mouth of the inlet pipe, as well as from the hydrants in the city, exhibits under the microscope the same animalculæ or living organisms that are found in that of the river—indicating traces of sewage—and they have concluded that the supply for the city must be taken from a point several miles to the northward, and farther out in the lake. It was, however, ascertained that the water farther to the northward is pure at only half a mile from shore.

The water being practically stagnant, so far as the removal of its impurities is concerned, it is reasonable to suppose that it is more fouled at those points where the sewers empty, than at its mouth, down by the breakwater.

The Sailors' and Soldiers' Home is about one mile outside the city limits. It contains about 400 acres of land, on which are erected large and commodious buildings, capable of accommodating 900 beneficiaries. They now have about 700, who are cared for in a manner that reflects much credit upon the management, and is a proof of the liberality of our government in providing for the sailors and soldiers who have been in the service of the country.

SHEBOYGAN is situated on the western shore of Lake Michigan, on a high bluff, gradually sloping to the river of the same name, which runs in front of the southern portion of the town, forming a long, narrow peninsula between the river and lake. That portion to the northward of the river is on a high bluff, but the major part of the town runs back from the lake and parallel with it.

There are about 7,500 inhabitants, principally Germans.

The air is pure, bracing, and remarkably healthful. The sewers unfortunately empty into the river, and the water is unfit for use. The water used in the town is the surface drainage taken from wells, which sometimes fail, and is not as pure, perhaps, as that of the lake. They claim to have no special endemic diseases.

There is a large and productive agricultural district adjacent to the town, and great quantities of wheat are shipped from this port.

Of the business of the place, the manufacture of chairs and leather is prominent and important.

A considerable number of persons from Tennessee spend the summer at this place to escape the sickly season at their homes in Memphis and elsewhere.

Sheboygan is about 50 miles to the northward of Milwaukee, with which there is railroad communication.

They have neither hospitals nor charitable institutions, except their society organizations, from which charities are dispensed.

GREEN BAY is situated on the east bank of Fox River, which empties into Green Bay, an arm of Lake Michigan. There are about 10,000 inhabitants. Their water supply is taken from the river. That in front of the town is muddy and impure.

The land all about there is low and marshy, and it would seem that they must suffer considerably from malarial fevers, as well as from other diseases incident to the poison of malaria, but those with whom I conversed would not admit that such is the fact.

PORT HURON is situated at the outlet of Lake Huron, and opposite Sarnia, in Canada. There are about 8,000 inhabitants. The town is supplied with water taken from the Saint Clair River, near the outlet of Lake Huron. It is built on low marshy land, and the inhabitants suffer greatly from the diseases induced by the poison of miasma. There was every indication of long suffering from such diseases in many of the boys I examined there.

DETROIT is one of the oldest cities in the country, and the most important commercial city in the State. It is situated on the Detroit River, opposite Windsor, in Canada, and is one of the most beautiful, healthful, and doubtless the cleanest city on the lakes. The industry and hospitality of the people, the beautiful streets, handsome public buildings and private residences, make it exceedingly attractive to strangers. It is a sort of army headquarters; the home of many army officers, and is considered by them one of the most desirable stations. It is probably the most central port of importance on the chain of the great lakes, and the government owns there an excellent wharf and a marine hospital.

The current in the river is rapid, and the water pure, deep, and clear. The water supply for the city is taken from the river, at a point sufficiently remote to insure its purity—a desideratum in public hygiene which cannot be claimed by either Chicago, Milwaukee, or Erie.

It has a population of about 125,000.

TOLEDO is situated on the Maumee River, about four or five miles from its mouth. The river empties into Lake Erie, and the channel, after leaving the mouth of the river, is very narrow and tortuous for several miles out in the lake, but it is well buoyed.

Toledo is a flourishing and growing commercial city, and has now about 60,000 inhabitants. They claim that more grain is shipped from that port than from Chicago or any other place on the lakes.

That part of the city bordering on the river is built upon low, muddy soil, and much of the adjacent land is also low and marshy, where malarial fevers, and all other diseases incident to a malarious district, prevail.

The water for the city is taken from the river some distance above, where it is said to be clear, but that in front of the town is muddy.

CLEVELAND is situated on the southwestern shore of Lake Erie, and is built on both sides of the Cuyahoga River, which has more current than either the Chicago or Milwaukee Rivers, but, like them, its waters are so fouled by the sewage matter and filth from the city that it emits the same unpleasant odor, and the same unhealthful gases are given off that I observed at Chicago and Milwaukee.

The water supply for the city is taken from the lake, and is said to be quite pure.

The population is about 175,000, and, next to Cincinnati, is probably the most important city in the State. It is a growing, wealthy, and prosperous town.

BUFFALO is situated at the eastern extremity of Lake Erie. There is a good harbor, well protected from storms, which is formed by the breakwater and the river which runs up into the city, on the banks of which large and expensive elevators are built.

The stream seems entirely too narrow for the enormous commerce of the city, for the great number of vessels arriving and departing sometimes find it difficult to ascend or descend the river, and often those last arriving are obliged to wait until others are unloaded and sent away before they can get up and find room for wharfage. This is always the last port on the lakes open to navigation in the spring. Large floes of drift-ice, being carried down the lake when the "break up" comes, bank up here many feet in height sometimes, and have as late as the first of June caused an entire embargo on navigation, preventing the entrance or departure of any vessels. This collection, over which the disagreeable east winds in March, April, and May sweep, is what causes them at Erie, Pa., to be so cold and damp that they seem to chill the very marrow in our bones.

ERIE is situated on the southwestern bank of the bay of Presque Isle, which is formed by a long narrow peninsula running from the mainland at the head of the bay in an easterly direction, and parallel with the shore, which, with the breakwater at its eastern terminus, forms a beautiful, large, and well-protected harbor.

The population of Erie is about 28,000. There are no medical colleges, nor are there any public charitable institutions of sufficient importance to be noticed here. There are a number of local societies from which charitities are dispensed, and the poor of the city are generally well cared for. There are no market-houses, and the marketing for the city is vended every Wednesday and Saturday from carts and wagons

which are backed up in close proximity with each other on the east side of State street, the principal business thoroughfare of the city. Often the market men, women, and children, principally Germans, are exposed to the pelting rains and fierce winds so prevalent here.

The city is supplied with water from the bay, which is extremely hard and full of lime, vegetable matter, and other impurities.

The sewerage of the city is very imperfect, and the main sewer empties into the basin formed by the wharves at a point a little more than a quarter of a mile to the eastward of the water-works.

There is very little motion to the water in the bay, save that given to it by the strong winds, and when the wind is from the eastward the water from towards the mouth of the bay and the basin, where the sewage and other filth is emptied, is blown westward to the standpipe and pumped up in the city.

As all the ice used in the city is taken from the bay, *about an eighth of a mile to the eastward of and below where the sewer empties*, it is so suggestive of sources of danger to the public health that the care of the municipal authorities would seem to be called for. It cannot fail to suggest the hygienic importance of extending the pipe further and taking the water from the lake, which they will be forced to in the near future.

Frequently during an easterly storm the odor from the drainage of the principal hotel is extremely offensive, and it must necessarily have a very depressing effect upon the vital powers of the inmates.

The bay runs in an easterly and westerly direction, its mouth being to the eastward.

The principal diseases here are throat and chest troubles, markedly rheumatism, neuralgia, diarrhœa, malarial and typhoid fevers, but not of a very alarming type. Of the deaths reported during the preceding year, 20 per cent. were from ththisis.

The death rate in Erie for 1878 was 12⅘ per thousand, which is lower perhaps than that of any other city on the lakes, and indicates an unusual degree of health. But that is probably in consequence of the frequent strong winds, dashing rains, and the great descent of the land to the bay, for by that means much of the filth in the streets, bad odors, and poisonous exhalations are carried off.

REPORT OF SURGEON J. R. TRYON.

U. S. S. VANDALIA.

KINGSTON, JAMAICA, reached generally in about fourteen days from the United States, should be visited with caution by naval vessels at all seasons of the year, and thorough inquiries made relative to the existence of epidemic disease, before risking communication with the ship. At the time of the visit of the Vandalia, April, 1879, the port was declared healthy by both the health officer and United States consul.

There is a quarantine station at Port Royal, seven miles below the city, and all ships are visited by the health officer before being admitted to pratique. The quarantine regulations of the port are good, and the health authorities under English control use apparently every precaution against the introduction of disease, but as the island is in close proximity to other West India ports, and trade with unhealthy places necessarily frequent, the liability to yellow fever by importation is very *great.* There has not been, however, a severe epidemic of the disease

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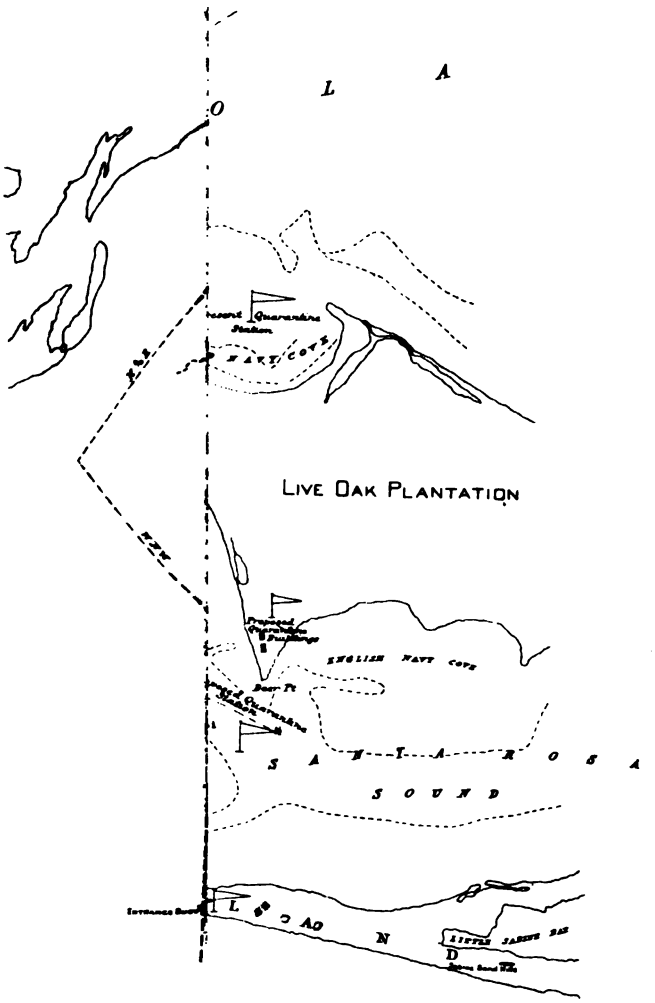


ince 1867, and the health rate of English troops garrisoned about the own is much better than in former years.

The drainage of the place is bad, and streets are dirty.

Specific diseases are common, and there is danger of malaria throughout the whole year. In the spring the prevailing winds are from the southeast, and the climate is hot and humid.

There is a small general hospital in the town, badly fitted. Comfortable sick-quarters for English soldiers are connected with the barracks at New Castle, a few miles up the mountain.

ASPINWALL, ISTHMUS OF PANAMA, merits the description Trollope has given it. The town is small, built on low, marshy ground, and in the neighborhood of extensive swampy districts. During the rainy season, which commences about May and continues until November or December, the hot sun alternates throughout the day with almost continuous rain, and engenders a climate hot, damp, enervating in character, and productive of every disease dependent upon malarial origin, intermittent fever, diarrhœa, and dysentery being most common.

The Vandalia visited the port twice during the year, once in May, and again in Septem'er, and at both times, aside from the existing pernicious influences of malarial poison, the port was declared healthy, no epidemic disease of any nature prevailing. The appearance of yel ow fever at this point is very rare, and very few cases have been reported since 1867, when it was e;idemic at Kingston, Jamaica, and traced directly from that port. In a place so well calculated for the propagation of such a disease—by defective drainage, intense heat, filth, and observance of no sanitary rules whatever—it is strange that the disease does not obtain a foothold. There is no such thing as quarantine; vessels from all ports are admitted—allowed alongside the wharves to discharge freight and receive cargo, regardless of the existence of any infectious disease.

The absence of yellow fever may partly be explained by the fact of the comparatively small amount of trade carried on by fruit and coasting vessels with the islands, the principal communication between the Isthmus and ports in the West Indies being made by large English, French, and German steamers, that remain only long enough in each place to discharge freight and receive cargo. The Pacific mail steamers go direct to New York, and are noted for their cleanliness.

When vessels of the Navy are sent to the Isthmus for any length of ime, care should be taken that they do not remain long enough to affect the crew by climatic exposure. A few days at sea or visit to ome neighboring port is a good sanitary measure and proves beneficial o both officers and men.

There are no resident physicians at Aspinwall, and all rely upon the urgeon of the Panama Railway Company for medical aid. This offier attends to the sick in the employ of the company and also has charge f the hospital for their accommodation.

The hospital referred to is the only one in the place, and answers the urpose for which it was built. It has accommodations for fifteen or wenty patients, and is well adapted to the treatment of most cases adiitted. By request I performed amputation of the leg at this hospital, hen last in Aspinwall, and found every convenience for the operation.

BOCA DEL TORRO, ALMIRANTE BAY, ISTHMUS OF CHIRIQUI, was vised in October, 1879, after leaving Aspinwall. Several cases of interittent and remittent fever appeared on the sick-list the date of arrival, ut remained only a few days under treatment, and no other cases reorted during the stay of the ship—nine days.

From the appearance of the surrounding country at this point—high hills, and islands thickly covered with substantial tree growths, and scarcity of marshy ground—I am confident, as the disease was of malarial origin, that the cases that appeared on board were all due to the exposure of the crew at the Isthmus of Panama.

I gained no reliable information from persons on shore relative to the prevalent diseases of the district and adjacent country, but know by personal observation that cases of malarial fever both among natives and foreigners existed in certain localities at the time of our visit.

The freedom of officers and crew from malarial disorders while in the port was attributable in a great degree to the favorable anchorage of the ship, fully half a mile from Careening Key, with an open roadstead on either side.

Pleasant weather prevailed most of the time during the stay of the vessel, temperature agreeable, air dry, mild sea breezes during the day, with land breezes at night, containing little moisture; both officers and men were greatly benefited by the change, although only 120 miles from Aspinwall. The only medicinal plant of any value growing in the vicinity of the islands is the sarsaparilla (Smilax officinalis), which is collected and prepared for shipment to England.

Caoutchouc (India rubber) is found in abundance along the coast and interior and sent to the United States.

GREYTOWN, NICARAGUA.—Ship anchored in open roadstead, owing to closing up of harbor, and remained only two days, from October 5 to October 7. Communication with the shore difficult at most seasons of the year on account of the surf.

The place is small and badly situated, and remarkably unhealthy at the time of our visit, owing probably to the extensive dredging of the river running through the town, and exposure of the moist, filthy soil on its banks during the hot weather. Prevalent diseases—intermittent, remittent, and typhus fevers.

VERA CRUZ, MEXICO.—The ship arrived at this port direct from Aspinwall October 30, and remained until November 4, 1879. The port was declared healthy, and the city considered free from epidemic and contagious disease. There has been very little yellow fever during the past season, and it has not prevailed in epidemic form.

The city has a population of about 10,000, is badly situated, and considered generally unhealthy. Water facilities good; drainage poor; sanitary regulations defective; and no quarantine system. Hospital accommodations ample and good for the climate, buildings substantial and well situated, and, with the exception of the disadvantages of imperfect closet arrangements and drainage that exists in all, are well fitted.

The Military Hospital, San Carlos, Hospital Civil de Mujeres, and Hospital San Sabastian admit diseases of any nature, without isolation of special cases. These hospitals accommodate, when filled, over 700 patients.

At the civil hospitals 756 cases were treated for different diseases during the month of September. The accompanying tables translated from the official records of the hospitals San Sabastian and Hospital Civil de Mujeres are interesting in giving an accurate statement of the amount and nature of disease under treatment at those institutions at that season of the year.

HOSPITAL SAN SABASTIAN, VERA CRUZ, MEXICO, SEPTEMBER, 1879.

Diseases.	Remaining August, 1879.	Admitted September, 1879.	Total.	Died.	Discharged cured.	Remaining in hospital.	Total.
of the liver	.....	2	2	.....	2	.....	2
s	1	1	2	.....	1	1	2
sis	4	1	5	.....	1	4	5
	5	6	11	.....	4	7	11
mus	9	20	29	.....	16	13	29
ria	1	4	5	.....	4	1	5
	2	10	12	.....	9	3	12
	12	35	47	.....	29	18	47
f the eye	4	3	7	.....	1	6	7
f the ear	1	.....	1	.....	.....	1	1
f the genito-urinary organs	2	.....	2	.....	.....	2	2
f the skin	.....	26	26	.....	26	.....	26
f the heart	1	1	2	1	1	.....	2
s	5	3	8	.....	2	6	8
	11	2	13	.....	3	10	13
is	8	9	17	.....	8	9	17
a	4	8	12	.....	6	6	12
	3	12	15	5	8	2	15
s	.....	2	2	.....	2	.....	2
lia	1	.....	1	.....	.....	1	1
	5	2	7	.....	2	5	7
ious	.....	1	1	1	.....	.....	1
nittent	22	89	111	.....	88	23	111
neral	1	14	15	.....	14	1	15
tent	11	7	18	.....	8	10	18
	3	.....	3	.....	.....	3	3
s	1	1	2	.....	1	1	2
	11	11	22	.....	6	16	22
	5	9	14	1	8	5	14
	1	.....	1	.....	.....	1	1
	2	.....	2	.....	.....	2	2
ia	3	6	9	.....	4	5	9
sm	20	19	39	.....	25	14	39
	.....	2	2	2	.....	.....	2
sis	5	5	10	4	1	5	10
	19	39	58	.....	38	20	58
RECAPITULATION.							
	180	342	522	14	313	195	522
	3	8	11	.....	5	6	11
al	183	350	533	14	318	201	533

HOSPITAL CIVIL DE MUJERES, VERA CRUZ, MEXICO.

Diseases.	Remaining August, 1879.	Admitted September, 1879.	Total.	Died.	Discharged cured.	Remaining in hospital.	Total.
Abscessus	2	2	4	.....	2	2	4
Carcinoma	1	.....	1	.....	.....	1	1
Diseases of digestive apparatus	.....	2	2	.....	2	.....	2
Diseases of respiratory organs	3	1	4	1	1	2	4
Disease of genito-urinary organs	10	.....	10	.....	4	6	10
Diseases of nervous system	1	.....	1	.....	.....	1	1
Diseases of the heart	1	2	3	1	.....	2	3
liver	1	1	2	1	.....	1	2
eyes	1	.....	1	.....	.....	1	1
skin	6	1	7	.....	2	5	7
joints	2	1	3	.....	1	2	3
Scrofula	.....	1	1	.....	1	.....	1
Tuberculosis	8	4	12	1	4	7	12
Contusio	1	6	7	.....	5	2	7
Coxitis	4	3	7	1	1	5	7
Fever:							
Yellow	.....	1	1	1	.....	.....	1
Ephemeral	2	15	17	.....	13	4	17
Intermittent	11	24	35	.....	25	10	35
Pernicious	5	7	12	2	6	4	12
Remittent	9	7	16	.....	7	9	16
Hemorrhages	.....	3	3	.....	.....	3	3
Wounds	3	5	8	.....	7	1	8
Neuralgia	.....	10	10	.....	4	6	10
Childbirth	.....	4	4	.....	2	2	4
Septicæmia	1	1	2	2	.....	.....	2
Tumors	2	1	3	.....	.....	3	3
Ulcers	4	11	15	.....	9	6	15
Syphilis	13	19	32	.....	17	15	32
RECAPITULATION.							
Adults	80	109	189	8	95	86	189
Minors	11	23	34	2	18	14	34
Total	91	132	223	10	113	100	223

KEY WEST, FLA., so often visited by vessels of war belonging to the North Atlantic station, is considered healthy from November to the month of June, inclusive, and yellow fever, with a reasonable quarantine, rarely exists at that time. The sanitary condition of the place is fair during the summer months, and the health authorities use every precaution to prevent the introduction of yellow fever by vessels arriving from Havana and other West India ports, but Key West is so near Havana, and the trade carried on between the places by fruit and other vessels is so great that, in spite of good quarantine regulations, a season rarely passes without cases of the disease. Many severe epidemics have occurred.

The Army garrisoned at this point by order of the War Department is now regularly removed every summer to some place of safety in the interior, avoiding unnecessary exposure.

During the visits of the ship to Key West, May and November, 1879, no epidemic disease of any nature existed, and the port was considered healthy.

PENSACOLA, FLA.—The Vandalia reached the navy-yard near this place the latter part of August, 1879, and was detained eleven days on account of necessary repairs required upon the engines of the vessel. The port was declared healthy at the time, and there were no restrictions on board, until the worthlessness of the quarantine regulations of the port was ascertained, when a strict quarantine was recommended between the ship and city of Pensacola, and communication with the

navy-yard restricted to such duty as the necessities of the service demanded.

Three cases of remittent fever appeared on the list on the ninth day after arrival, one of which was transferred to hospital.

On account of the government stations near the city of Pensacola the health of the port is of vital importance, and should be maintained by rigid sanitary rules and strict quarantine regulations.

Both Army and Navy on this station have suffered from frightful epidemics of yellow fever, traced directly to carelessness at quarantine, and now soldiers at Barrancas are removed during the summer months by order of the War Department to some place of safety.

If the navy-yard and army post at Barrancas are to be continued at this point the government should give some special attention to the establishment of an efficient quarantine for their protection against disease of epidemic nature.

The accompanying tracing gives topography of place and harbor.

If the present quarantine station at Navy Bay could be removed to Deer Point, extending into Santa Rosa Sound, and suitable buildings erected there and on Santa Rosa Island for sick and well from infected vessels, all in charge of a proper officer, and the quarantine rules suggested by the National Board of Health adopted and enforced by the health authorities of the port, it is believed comparative safety would be secured to the entire district during the yellow-fever months.

Navy Bay is so accessible to Pensacola that there is danger of constant communication between the points, without a large force to prevent it.

At Deer Point there is sufficient water to accommodate any vessel coming into the harbor, it is out of the way, and the mainland is adapted to the erection of all necessary buildings, except the lazaretto, which could be established opposite, on Santa Rosa Island.

PORT ROYAL, S. C., was visited in June, on the way north, and the following August for coal, on the way south.

The Pawnee, used as a coaling vessel at this point for ships of the squadron, came directly from Key West, where she was occupied for hospital purposes for some years, and frequently had yellow fever on board.

Whether the vessel was specially prepared, by thorough disinfection and fumigation, before being placed on such duty in this climate, is unknown, but if not, it is a question whether the yellow-fever infection of the Plymouth, recently attached to the North Atlantic station, and finally placed out of commission on that account, was not primarily received on board by going alongside of her and procuring coal.

HAVANA, CUBA.—Vessel arrived from Key West, Fla., on the morning of November 22, 1879, and remained until the evening of the 26th; prevailing wind during the time northeast by east.

Havana can be visited by vessels of war of the Navy with comparative safety for a short time at this season of the year, and upon arrival, on communication with the health authorities, the sanitary condition of the port and adjacent country was declared good in open bay but bad at some wharves. Prevailing diseases, yellow and malarial fevers, dysentery, and diarrhœa. Total number of cases of such diseases not reported. Eight deaths from yellow fever during the week preceding November 22, 1879.

The stay was too short to obtain data for a complete report of hospital and medical institutions.

There are public and private hospitals in the city, including the mili-

tary establishments, for the accommodation of over three thousand patients. As the water and harbor bottom were considered filthy, great care was recommended to be taken with the anchor chain, the cable to be well cleaned before being payed below in the lockers—washed thoroughly with water and strong solution of sulphate of iron.

REPORT OF PASSED ASSISTANT SURGEON THEODORE C. HEYL

U. S. S. Rio Bravo.

This vessel, during the year 1879, has remained at Brownsville, Tex., except for a few days while steaming up the Rio Grande. The country for nearly 100 miles back from Brownsville is flat, the only variation being an occasional wide furrow, formed by the dry bed of the river, it having been diverted from its former course by uncontrollable changes in the direction of its current. About Rio Grande City, where we were in the spring of 1878, and at Reynoso, in Mexico, opposite Edinburg, Tex., the country is hilly, and a good building stone may be had by blasting.

The river flows in but one direction, from the source of supply to its mouth, has a speed of from one to two knots, approaching three at high river, is muddy, shallow, forces its own direction by cutting away banks as it rises, and abounds in the alligator, gar, and large catfish. Its one direction, and no pollution from any source above us, insure its purity.

There is no artificial drainage whatever in Brownsville; there is a wooden shoot placed underground at the end of one of the streets for removing deposits, I suppose, but it has been dry now for months.

The soil is light, readily permitting infiltration of fluid matters, but the garbage is not removed on any comprehensive scale or plan. The authorities have sporadic attacks of street-cleaning, generally induced by a threatened epidemic of yellow fever, or some sharp newspaper article, calling attention to the disgraceful condition of the streets. The rain-fall commences in July and continues until October, when the land is drenched. In November there are commonly drizzling rains, lasting several weeks, but they cease about the first of December. This year the rains were unusually early, and were steady. The streets, in many places, were liquid mire; in many others, where garbage and offal had been thrown, putrefactive changes had taken place, and foul odors emanated from such messes. The streets were in such a wretched condition that popular outcry demanded they should be cleansed, which, at last, was done. Until the nuisances were abated noses and eyes were offended, but health did not suffer, apparently.

Until a short time since, the usual certificate of death was not required from the medical attendant to secure interment (legally, twenty-four hours after death), so that no classified arrangement of the causes of death by disease is to be had. Violence contributes a fair proportion, the results of alcoholic poisoning another; but yellow fever has the largest number of victims. Commencing about 1850, brought in from Cuba in a fruit schooner, the disease ravaged the towns of Brownsville and Matamoros (opposite one another). It appeared several years successively, with varying violence, until the late war, when want of commerce from the Gulf or infected ports prevented its importation. After the war, in 1867, it was again brought in, and it nearly depopulated the town. Since then it appeared in 1868 and 1869, but mild in character. It dis-

appeared on the appearance of a winter cold enough to produce thin films of ice (rare here), and has not since been brought in—owing partly to rare good luck, great diminution in shipping from the Gulf, and close quarantine.

The water supply to Brownsville is from the Rio Grande and from cisterns. In the one case it is pumped into vessels, allowed to settle, and is then distributed in carts; in the second instance the rain-fall furnishes the supply. In a small way, too, water is carried about the streets, direct from the muddy river. The water abounds in silicates, but is no element in producing disease. After the close of the late war, Brownsville was a thriving place, but fever and violence carried off many of its citizens, and the abuse of alcohol rendered unproductive the efforts of others. I see no old men except among the Mexicans (three-fifths of the population of the place). There is grim and quaint humor in the remark that it would be well for a man to die a natural death in Texas, in order to learn what the climate would do in prolonging life; for the weather in winter is lovely, mild, and balmy, surpassing, though resembling, that of Nice. Flowers bloom all the winter months, and oranges, limes, and citrons are seen ripening on their several trees. The heat of summer is not very greatly higher at Brownsville than it is in New York City, but it is so prolonged, and it lasts so many hours of the day and night, that it is very enervating. Mosquitoes abound nearly all the year, as well as gnats and flies, rendering a mosquito-bar a necessity. I have seen the thermometer at Rio Grande City, 100 miles from here, register 116° in the shade, and on this ship 108° was reached in June, 1878. There is a breeze from the southward in the afternoon, during part of the long summer, which makes the heat endurable.

In March there are high winds, which blow the pulverulent dry soil into every crevice, and make out-door pedestrianism unpleasant enough.

No statistics of disease are to be had for the reason before stated. There is a military hospital at Fort Brown (a United States Army post, at Brownsville), and I believe patients from the town can be admitted to it on the payment of a small sum. Near Matamoros, Mexico (across the river from Fort Brown), there is a military hospital under the control of the Mexican authorities.

It is a saying in this place that heat stroke is unknown. Certain it is that there has not been any for the last two and a quarter years, though the Mexicans are to be seen, daily, in hot weather, stripped to the middle, exposed to the fierce glare of the sun, with no ill effect upon them so far as is shown. Bronchitis is prevalent during the winter, caused mostly by the "northers," so sudden in approach, which are too well known to need description here, beyond that there is a sultry, close condition of the air, when one reeks with sweat, followed by a sudden great fall in the temperature, cold winds, and sometimes cold rain. Cigarette smoking, and inhalation of the smoke, aggravate the bronchitis, as does early rising amidst fog and damp—a custom necessary to the peasant farmer—for it is he who suffers most from bronchitis. These people sleep on skins, on the ground, winter and summer. In winter, there is a smoldering fire within their huts, the smoke from which greatly teases any lung or eye affection. Consumption is not common, but it is rapid; I have never known of a case of genuine pneumonia. Bladder affections are moderately common, following stricture, treated or maltreated. Syphilis is very prevalent and virulent; epithelioma is not rare. Two fatal cases of cancer of the mouth occurred recently, as well as two cases of acute inflammatory rheumatism, but the latter is rare.

Genuine enteric fever has never been known, nor typhus; but remit-

equently takes on a low type, closely resembling typhoid, ally. The post-mortem clears up the case, although some oudly insist on the case as one of enteric fever. I may say practitioner, resident in Matamoras, insists that he sees of febris flava every year. This was hard to explain, until he past s. mer, when one of his cases of "undoubted yellow fever" ame under e notice of the post surgeon, and some other practitioners, ho pronou..ced it typho-malarial fever—and the autopsy verified it.

Of the maladies peculiar to the puerperal state, there would seem to be none. The peasant class employ midwives, who generally accomplish what is expected of them. One case of ovarian tumor of twelve years duration is yet alive and goes about a little.

There is but one charity, as such, in Brownsville, Tex. It is a small society, under the management of the Jews, for their own sect, and but little is known of it. The very [redacted] the town are entitled to the services of a medical man, who is pa[redacted]e corporation. There is no almshouse, infirmary, or dispensary, [redacted] the last two are greatly needed; while an alsmshouse would be an esta[redacted]shment the success of which could be confidently predicted from its v[redacted]oundation.

SANITARY CONDITION

OF THE

SOUTH ATLANTIC STATION.

105
90
75
60
45
30
15
NORTH
AMERICA
N I T E D
S T A T E S
N.York
AZORES
Madeira
Canary Is.
Morocco
Sarragosso
Sea
GULF
OF
MEXICO
MEXICO
Windward Is.
CARIBBEE
d'Verde I.
Columbia
ATLANTIC
Monrovia
SOUTH
AMERICA
BRAZIL
Pernambuco
Bahia
Porto Seguro
Rio de Janeiro
Callao
Peru
Valparaiso
La Plata
Buenos Ayres
Monte Video
Rio de la Plata
Catharina I.
Patagonia
Falkland I.
Georgia
Sandwich land
South Shetland
Palmers Land
St Hele
SOUTH ATLANT
STATION.
105
90
75
60
45
30
15
Published by the Bureau of Medicine

SOUTH ATLANTIC STATION.

This, the smallest of our squadrons, was composed in 1879 of but four essels, viz, the Hartford and the Shenandoah, second-rates, serving in urn as flag-ship, and the Essex and Wachusett, third-rates. The total orce was composed of 1,011 men, and corrected for time 610.

The total number of cases treated was 636, giving a ratio 1,042.62 per housand; there were discharged, cured, 591=968.8 per M.; there were nvalided 33=54 per M.; none died, and there were continued 12= 9.7 per M. The total loss of service was 5,158 days; the average num- er of sick (absolute) was 14.10; and the average number of sick per M. as 38.63; the average number of days under treatment was 8.11.

The highest average number of men sick daily was on board the henandoah, with an average per thousand of 34.91, and the smallest n the Hartford, 18.80. The greatest average number of days under reatment was on the Hartford, 11.63, and the smallest on the Wachu- ett, 3.97.

The following is the daily average loss of service occurring from dis- ases of the various classes:

Zymotic	1.48
Constitutional	3.14
Local diseases:	
Diseases of the nervous system	.31
Diseases of the eye	.39
Diseases of the ear	.33
Diseases of the teeth	.02
Diseases of the circulatory system	.03
Diseases of the absorbent system	.59
Diseases of the respiratory system	1.57
Diseases of the digestive system	.89
Diseases of the genito-urinary system	1.23
Diseases of the locomotive system	.48
Diseases of the integumentary system	1.31
Poisons	.12
Tumors	.88
Injuries	2.07

The 33 invalided were distributed as follows:

General diseases:	
Zymotic	1
Constitutional	7
Local diseases:	
Diseases of the nervous system	3
Diseases of the eye	1
Diseases of the absorbent system	3
Diseases of the respiratory system	5
Diseases of the genito-urinary system	1
Diseases of the integumentary system	1
Injuries	11

There were invalided from the Hartford, 24; from the Essex, 7; from he Wachusett, 0; from the Shenandoah, 2.

The group of zymotic diseases contributed 73 cases, with a ratio per housand of 119.67, and distributed as follows: febris intermittens, 42;

febris remittens, 15; febris continua simplex, 10; febricula and enteric fever, each 2, and 1 each of erysipelas and parotitis. The intermittent fever was confined almost entirely to the Hartford and Essex, the former having 20 and the latter 19 cases, and all the cases of remittent fever with one exception occurred on the Hartford. The single case of erysipelas was on the Essex, and of the 2 cases of enteric fever, one occurred on the Hartford and the other on the Shenandoah. None were invalided in this class.

No cases of yellow fever appeared in the squadron during the year.

Vaccina.—No cases were returned, and the condensed table of vaccination is here given:

Ship.	Presenting evidence of small-pox.		Presenting evidence of previous vaccination.		No evidence of previous vaccination.		Total.
	Successful.	Unsuccessful.	Successful.	Unsuccessful.	Successful.	Unsuccessful.	
Hartford	2	8	5	18	4	8	45
Essex	.....	.....	.....	5	.....	.....	5
Shenandoah	.....	8	5	193	.....	17	223
Total	2	16	10	216	4	25	273
Percentage of cases	6.6		82.8		10.6		.....
Percentage successful	11.5		4.4		13.8		5.8

Yellow fever.—There were no cases of yellow fever reported as happening in the squadron, but there were at various points on the station evidences of this disease, and the following extracts from Fleet Surgeon A. C. Gorgas's report will be read with interest:

Upon the subject of the yellow fever this year, I would refer to a special report which I forwarded from Rio de Janeiro on the 23d of September last, in obedience to the special circular order of the Navy Department dated August 14, 1879. I made mention in that report of the result of the treatment of the yellow fever at the maritime hospital of Santa Isabel at Jurujuba, where of 1,405 cases the percentage of deaths was 17.4. Considering that these cases were, in a large proportion, unacclimated foreigners, the proportion of deaths was very low.

The treatment pursued, as reported by Dr. Luiz Manoel Pinto Netto, director of the hospital, is as follows:

After a purgative, usually castor oil, one of the following formulæ was used as a diaphoretic mixture, viz: Infusion of jaborandi leaves, 150 grams; tincture of jaborandi, 8 grams; tincture of digitalis, 1 gram. To this, according to the intensity of the fever and the frequency of the pulse, was added, or not, veratrine (*alcool de veratrina*); or infusion of elder flowers and borage, and port wine, 100 grams; acetate of ammonia, 12 grams; tincture of aconite, 1 gram; tincture of belladonna, 12 drops; syrup, 30 grams. Associating with this veratrine and digitalis, according to the indications of the pulse and thermometer. With these, sinapisms and pediluvia.

In the second stage diuretics were given, the spiritus ætheris nitrosi being preferred as being best borne by the stomach. With this was given the diuretic wine of Corvisart, and iced lemonade or punch as an ordinary drink. For vomiting, a blister to the epigastric region, ice, Murray's fluid magnesia. For hiccough, bromide of potassium; insomnia, hydrate of chloral; and hemorrhages, perchloride of iron. In adynamic cases, tonics; preference being given to the potion of Jaccoud. In anuria, large doses of the sulphate of quinine, phosphorus; cups, blisters, and frictions over the loins, and hot cataplasms to the hypogastric region.

In cases of black vomit, ol. terebinth, Venice turpentine, liquor ammonia, and tincture of iodine, externally; and internally, ice, iced lemonade, perchloride of iron, ergotine, &c. In grave cases a milk diet.

In the year 1878 there were 1,161 deaths from fevers, exclusive of yellow fever and small-pox. Of this last there were 2,175 deaths. Of the deaths from fevers 208 were typhoid, and 843 miasmatic, of which 668 were of the pernicious form.

We arrived at Rio de Janeiro on the 2d of August. The yellow fever had been epidemic during the hot season, but less severely so than during the same period for 1878, and sporadic cases were still noticed in the obituary reports. The following table shows the mortality from this disease during the corresponding months of this and last year.

The former are taken from the official report of interments, and the latter from the nual report of Baron de Lavradio, health inspector of the port of Rio de Janeiro.

	1878.	1879.
nuary	127	77
bruary	326	141
arch	264	193
ril	99	151
ay	42	52
ne	19	50
ly	18	35
gust	4	26
ptember	8	*8
Total	907	733

While this table shows fewer deaths this year for the whole period, it exhibits a nger continuance for the epidemic character of the disease.

Of the 733 deaths of this year, *only 12 were natives of Rio de Janeiro.*

There were altogether 930 deaths from yellow fever during 1878 in the city besides 44 at the marine hospital of Jurujuba, near Rio. To this hospital are sent the cases f yellow fever occurring among the crews of the ships anchored in the harbor.

During 1878, 1,405 cases were received at the Jurujuba hospital, of which 244 died. Of these, 1,118 arrived at the hospital in the first period of the disease, of which number only 75 died, or 6.7 per centum; 274 in the second period, of which 156 died, or 56.95 per centum; and 13 were received moribund. The percentage of fatal cases was, therefore, about 17.4.

General liberty was given our crew both last year and this, but no cases have occurred among the ship's company.

The foreign men-of-war here have allowed free communication with the town, and have given their crews liberty.

One death of the disease, of a sailor belonging to H. M. S. Garnet, has taken place, and it is reported that one of the crew of H. M. S. Shannon died of the same on the voyage from here to Montevideo. The Shannon was here about three weeks, and gave only special liberty to a portion of her crew.

From the official reports since 1873, inclusive, *there has been no month in those years in which deaths from yellow fever have not occurred*, and in but one of those years did the disease fail to become epidemic during the hot season. This was in 1877, when the greatest monthly number of deaths during the epidemic season was 39 in March. In December of the same year, however, there were 53 deaths, the beginning of the epidemic of the following year. There has been a drought this year, no rain having fallen from early in July until the 22d of December. This has not only been a cause of present inconvenience and even distress, particularly among the poor, but is also a subject of anxiety in regard to the health of the place during the approaching season of high temperature.

The sewers, for want of water to flush them, have become very foul, and when the rains do come the disturbance of their contents and the liberation of their effluvia may add seriously to the other causes of disease. Opinion is, however, divided upon this subject. While some predict a bad year in consequence of the drought, others hold that a wet summer is likely to follow this dry season, and that the consequent cooling of the atmosphere, and the cleaning of the sewers and streets will be favorable to the health of the city. Statistics seem to show that the epidemics occur quite independently of wet or dry seasons.

The year 1872, preceding the great epidemic of the following summer, was distinguished by a rainfall far exceeding the average and the greatest for nine years.

The rainfall in 1873 was below the average. The epidemic of 1874 was a moderate ne.

The rainfall of 1874 was greater even than that of 1872. The epidemic of 1875 was severe one, and the rainfalls of 1875 and 1876, about equal and a little above the verage, in the former year preceded the great epidemic of 1876, and in the latter the mparatively healthy season of 1877.

The origin and causes of the yellow fever at this place are as mysterious and as ill derstood as elsewhere.

It is known, however, that the disease has become endemic in Rio, most probably nce 1861, and that epidemics of more or less intensity break out from time to time dependent of any known causes or any appreciable conditions. These epidemics ve been more regular and frequent since 1873, and while all classes and all races e attacked, unacclimated foreigners are most susceptible to the disease and form e vast majority of the fatal cases.

*23 days.

Unacclimated persons are at all times liable to take the disease, *and at any season of the year* ships leaving this port may carry it to other countries.

It is dangerous for men-of-war to lie here before the first of June, or after the first of November, under ordinary circumstances, and, of course, at any time during epidemics.

Suspicious cases, and some of the malarial fevers resemble yellow fever in their early stages, should be sent to hospital.

This year there have been fewer cases of malarial fever on board than last. Quinine has been given freely prophylactically, especially to persons who were ill last year, or who have had the malarial fever before.

The general health of Rio is better now than during the corresponding season of 1873, when small-pox was epidemic.

The number and proportion of malarial and pulmonary diseases are about the same.

The consideration of these, of the diseases of the Rio de la Plata, of the condition of the crew of the ship, and the summary of atmospheric observations, I shall reserve for my general sanitary report, to be sent in at the end of the year or the cruise.

Constitutional diseases.—The number of cases in this group aggregated 88, with a ratio of 144.16 per M, and the loss of service from them amounted to 1,159 days. Acute rheumatism supplied the largest number of cases, 30, a ratio of 49.18 per M. Next comes chronic rheumatism with 17 cases and a ratio of 27.86 per M. Syphilis consecutiva and primitiva contributed 12 and 11 cases respectively, the ratio of the former being 19.67 per M, and that of the latter 18.03 per M. There were 7 cases each of adynamia and lumbago, 3 of gout, and 1 of diabetes. The Hartford suffered more than any other vessel from this class of diseases, having a ratio of 40.98 per M, while the least amount occurred on the Essex, viz, 32.78. On this ship and on the Shenandoah the most prominent disease of the class was acute rheumatism, of which there were 10 and 18 cases respectively, while on the Hartford there were but 2.

Nervous system.—The number admitted with affections coming within this class were 51, making a ratio of 83.62 per M, with a loss of service of 135 days. The distribution was as follows: headache, 18 cases; neuralgia, 15; dementia, 5; seasickness, 4; epilepsy and hysteria, of each 2; and of melancholia, paralysis, pleurodynia, sciatica, and vertigo, there was of each 1. This class of diseases prevailed on the Wachusett to an extent nearly double that of all the other ships conjoined, her ratio being 55.73 per M; next comes the Shenandoah, 13.11 per M; and the last on the list is the Essex, with a ratio of 93.27 per M. But three men of this class were invalided, and all were from the Hartford, the cases being dementia, neuralgia, and paralysis.

Diseases of the eye.—Of these there were 15 cases, causing a loss of service of 143 days, and the ratio per M was 24.59; 12 of the cases were conjunctivitis, 2 congestion of the retina, and the other was keratitis. The cases were equally divided between the Hartford, the Wachusett, and the Shenandoah, the Essex having no admissions in this class. One case of conjunctivitis was invalided from the Hartford.

The ear.—There was 1 case each of otalgia and otitis and 3 of otorrhœa in the squadron, a total of 5, making a ratio of 8.19 per M, and a loss of service of 121 days. The diseases of this class were limited to the Essex and Wachusett.

Teeth.—There were 3 cases of odontalgia—2 on the Wachusett and 1 on the Shenandoah. The loss of service from this cause was very small, being only 8 days.

Circulatory system.—Of this class there were also but 3 cases: 1 of palpitation and 2 of syncope, making a ratio of 9.91 per M.

Absorbent system.—Nine cases of adenitis, of which 75 per cent. occurred on the Hartford, gave a ratio of 14.75 per M, and a loss of 214 days' service. Two cases were invalided from the Hartford and 1 from the Essex.

Respiratory system.—There was an aggregate of 82 cases of disease coming under this class, with a ratio of 134.42 per M, and the loss of service occasioned by them was 573 days. The cases were distributed as follows: catarrh, 39; acute bronchitis, 20; chronic bronchitis, 7; laryngitis and pleuritis, of each, 4, with 2 of pneumonia and chronic pneumonic phthisis. The Essex suffered most from these affections, having a ratio of 39.34 per M; next, the Shenandoah, 34.42 per M; then the Hartford, 32.78; and, lastly, the Wachusett, 27.86 per M. Bronchitis, acute and chronic, predominated on the Hartford, while on the smaller ships catarrhs prevailed. But one man was invalided, a case of pneumonia from the Shenandoah.

Digestive system.—The diseases within this order gave a ratio of 131.14 per M, with a loss of 324 days. Acute diarrhœa largely predominated, there having been 35 cases. Colic followed, with 13 cases, and the other affections as follows: hæmorrhoids, 6; constipation, 5; acute dysentery, 9; tonsillitis, 5, and a small number of cholera morbus, dyspepsia, gastritis, and pharyngitis. These affections were about equally divided among the vessels and none were invalided from them.

Genito-urinary system.—The number of cases in this class was 31 and the ratio 51.81. The loss occasioned by them was 448 days. As occurs usually, the predominating affections in the group were orchitis and gonorrhœa, of which there were 10 and 9 cases, respectively. There were 4 cases of urethral stricture, 2 of chancroid, and 1 each of balanitis, cystitis, hydrocele, nephritis, and phymosis. A case of chancroid was invalided from the Hartford. This ship and the Wachusett suffered equally from these affections, the ratio being in each case 14.75 per M; on the Essex it was 13.11, and on the Shenandoah but 8.15 per M.

Locomotive system.—The aggregate of admissions in this class was 10; 2 cases of bursitis, 2 of hydrops articulorum, 4 of periostitis, and 2 of synovitis. The ratio of the whole was 16.39, and for the ships as follows: Hartford and Essex, of each, 6.55 per M, Wachusett 3.27 per M. None occurred on the Shenandoah, and none were invalided from the squadron. The loss of service was 176 days.

Integumentary system.—There was an aggregate of 64 cases in this class, with a ratio of 104.91 per M, and the loss of service was 480 days. The largest number was on board the Hartford, which ship had a ratio of 34.42 per M; the Wachusett nearly the same ratio, 31.14 per M, while on the Essex and Shenandoah it was 24.59 and 14.75, respectively. The affections were of the character which prevails on board ship, boils and abscesses, ulcers and paronychia. One case of ulcus was invalided from the Essex.

Poisons.—There were returned from the squadron 9 cases of alcoholism, of which all but one case occurred on the Essex. The Shenandoah and Wachusett recorded no cases, and the Hartford had but one. There was reported one case of poisoned wound from the Essex.

Tumors.—One case of cystoma from the Hartford, and one of hygroma from the Essex were returned.

Injuries.—In this class 110 cases were reported, giving a ratio of 180.32 per M. By far the largest proportion occurred on the Hartford, which had a ratio of 73.77 per M. On the other ships the ratios were as follows: Shenandoah, 39.34 per M; Wachusett, 34.42; Essex, 32.78. The total loss of service from this class was 756 days, and the average number of days under treatment 6.8. The principal forms of injuries were, contusion, 48 cases; sprain, 14 cases; contused wounds, 19 cases; incised wounds, 5 cases; hernia, 8 cases; and fracture, 4 cases. Eleven men were invalided, of whom 10 were from the Hartford and 1 from the Shenandoah.

SOUTH ATLANTIC STATION.

TABLE I.—*Showing the force of each ship, the number admitted and discharged, and number days under treatment, and average per thousand of force on the South Atlantic station.*

Vessels.	Strength.	Strength corrected for time.	Admitted.					
			From last year.	First quarter.	Second quarter.	Third quarter.	Fourth quarter.	Total.
Hartford, 2d rate; 2,000 tons; wood; screw; service, 338 days	377	349	3	70	57	48	29	207
Essex, 3d rate; 615 tons; wood; screw; service, 295 days	183	148	3	52	48	43	3	149
Wachusett, 3d rate; 695 tons; wood; screw; service, 92 days	209	52	.....	.....	.....	.....	159	159
Shenandoah, 2d rate; 929 tons; wood; screw; service, 92 days	242	61	.....	.....	.....	.....	121	121
Aggregate	1,011	610	6	122	105	91	312	636

Vessels.	Discharged.				Continued.	Number of sick days.	Average number of days under treatment.	No. of sick, daily average.		No. admitted per M of strength.
	Cured.	Invalided.	Died.	Total.				Absolute.	Per M of strength.	
Hartford, 2d rate; 2,000 tons; wood; screw; service, 338 days.	184	23	....	207	....	2,408	11.63	6.59	10.80	333.34
Essex, 3d rate; 615 tons; wood; screw; service, 295 days	141	8	....	149	....	1,340	8.99	3.67	6.00	244.25
Wachusett, 3d rate; 695 tons; wood; screw; service, 92 days	150	....	....	150	9	632	3.97	1.73	2.83	260.65
Shenandoah, 2d rate; 929 tons; wood; screw; service, 92 days	116	2	....	118	3	778	6.42	2.13	3.49	198.36
Aggregate	591	33	....	624	12	5,158	8.11	14.13	23.16	1,062.62

TABLE II.—*Showing the number of cases, the discharged, the invalided, and the dead for each disease, and their ratio per thousand of the force on the South Atlantic station.*

Diseases and injuries.	Cases.		Number of sick-days.	Average number of men sick daily.		Average number of days under treatment.	Discharged to duty.		Invalided.		Remaining.
	No.	Per M of force.		Absolute.	Ratio per M of force.		No.	Per M of force.	No.	Per M of force.	
GENERAL DISEASES.											
1. *Zymotic diseases.*											
Erysipelas	1	1.63	30	.08	.13	30	1	1.63	....	.....	....
Febricula	2	3.27	6	.01	.01	3	2	3.27	....	.....	....
Febris continua simp	10	16.39	50	.13	.21	5	10	16.39	....	.....	....
Febris enterica	2	3.27	57	.15	.24	28.5	2	3.27	....	.....	....
Febris intermittens	42	68.85	239	.65	1.06	56.9	42	68.85	....	.....	....
Febris remittens	15	24.59	160	.43	.74	10.6	15	24.59	....	.....	....
Parotitis	1	1.63	1	.....	.....	1	.....	.....	1	1.63	....
Aggregate	73	119.67	543	1.48	2.42	74.3	72	118.0	1	1.63	....

II.—*Showing the number of cases, the discharged, the invalided, and the dead for each disease, etc.*—Continued.

s and injuries.	Cases.		Number of sick days.	Average number of men sick daily.		Average number of days under treatment.	Discharged to duty.		Invalided.		Remaining.
	No.	Per M of force.		Absolute.	Ratio per M of force.		No.	Per M of force.	No.	Per M of force.	
utional diseases.											
a	7	11.47	70	.19	.31	10	5	8.19	2	3.27	....
	1	1.63	75	.20	.32	7.5	.....	.....	.....	.....	1
	7	11.47	150	.41	.67	21.4	6	9.83	1	1.63	....
	3	4.91	11	.03	.04	3.3	2	3.27	1	1.63	....
ismus acutus	30	49.18	355	.97	1.58	11.8	29	47.54	1	1.63	....
ismus chronicus	17	27.86	98	.26	.42	5.7	17	27.86	....	.....	....
primitiva	11	18.03	270	.73	1.19	24.5	11	18.03	....	.....	....
consecutiva	12	19.67	130	.35	.57	10.8	7	11.47	2	3.27	3
gregate	88	144.26	1,159	3.14	5.14	13.1	77	126.23	7	11.47	4
L DISEASES.											
rvous system.											
gia	18	25.50	30	.08	.13	1.6	18	45.90	....	.....	....
	5	8.19	20	.05	.08	4	4	6.55	1	1.63	....
	2	3.27	30	.08	.13	15	2	3.27	....	.....	....
	2	3.27	5	.01	.01	2.5	2	3.27	....	.....	....
olia	1	1.63	1	.....	.....	1	1	1.63	....	.....	....
narina	4	6.55	8	.02	.03	2	4	6.55	....	.....	....
a	15	24.59	30	.08	.13	2	13	21.31	1	1.63	1
	1	1.63	1	.....	.....	1	.....	.....	1	1.63	....
nia	1	1.63	3	.....	.....	3	1	1.63	....	.....	....
	1	1.63	3	.....	.....	3	1	1.63	....	.....	....
	1	1.63	4	.01	.01	4	1	1.63	....	.....	....
gregate	51	82.62	135	.36	.57	2.6	47	77.05	3	4.91	1
ases of the eye.											
lvitis	12	19.67	120	.32	.52	10	10	16.39	1	1.63	1
	1	1.63	1	.....	.....	1	1	1.63	....	.....	....
ongestio	2	3.27	22	.05	.08	11	1	1.63	....	.....	1
gregate	15	24.59	143	.39	.64	9.5	12	19.67	1	1.63	2
ases of the ear.											
	1	1.63	3	.....	.....	3	1	1.63	....	.....	....
	3	4.91	110	.3	.49	36.6	3	4.91	....	.....	....
	1	1.63	8	.02	.05	8	1	1.63	....	.....	....
gregate	5	8.19	121	.33	.54	24.2	5	8.19	....	.....	....
ases of the teeth.											
ia	3	4.91	8	.02	.05	2.6	3	4.91	....	.....	....
ases of the circu-ory system.											
o	1	1.63	8	.02	.05	8	1	1.63	....	.....	....
	2	3.27	4	.01	.01	2	2	3.27	....	.....	....
gregate	3	4.91	12	.03	.04	4	3	4.91	....	.....	....
es of the absorb-t system.											
	9	14.75	214	.59	.96	23.7	6	9.83	3	4.91	....
es of the respira-ry system.											
	3	4.91	10	.027	.032	3.3	1	1.63	1	1.63	1
is acuta	20	32.78	220	.6	.98	11	19	31.14	1	1.63	....
is chronica	7	11.47	134	.36	.59	19.1	5	8.19	2	3.27	....
s	39	63.93	146	.4	.65	3.7	39	63.93	....	.....	....
sis	1	1.63	1	.....	.....	1	1	1.63	....	.....	....
is	4	6.55	18	.049	.08	4.5	4	6.55	....	.....	....
pneum. chron	2	3.27	20	.05	.08	10	2	3.27	....	.....	....
	4	6.55	20	.05	.08	5	4	6.55	....	.....	....
ia	2	2.27	4	.01	.01	2	1	1.63	1	1.63	....
gregate	82	134.42	573	1.57	2.57	6.9	76	124.59	5	8.19	1

TABLE II.—*Showing the number of cases, the discharged, the invalided, and the dead for each disease, etc.*—Continued.

Diseases and injuries.	Cases.		Number of sick-days.	Average number of men sick daily.		Average number of days under treatment.	Discharged to duty.		Invalided.		Remaining.
	No.	Per M of force.		Absolute.	Ratio per M of force.		No.	Per M of force.	No.	Per M of force.	
8. *Diseases of the digestive system.*											
Cholera morbus	3	4.91	6	.01	.01	2	3	4.91	....	.....	....
Colica	13	21.31	31	.08	.13	2.3	13	21.31	....	.....	....
Constipatio	5	8.19	5	.01	.01	1	5	8.19	....	.....	....
Diarrhœa acute	35	57.37	180	.08	.11	5.1	35	57.37	....	.....	....
Diarrhœa chronica	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	....
Dysenteria acute	9	14.75	19	.05	.08	2.1	9	14.75	....	.....	....
Dyspepsia	2	3.27	24	.06	.09	12	2	3.27	....	.....	....
Gastritis	1	1.63	3	.....	.....	3	1	1.63	....	.....	....
Hæmorrhoïs	6	9.83	24	.06	.09	4	6	9.83	....	.....	....
Pharyngitis	1	1.63	4	.01	.01	4	1	1.63	....	.....	....
Tonsillitis	5	8.19	28	.07	.11	5.6	5	8.19	....	.....	....
Aggregate	80	131.14	324	.89	1.46	4	80	131.14	....	.....	....
9. *Diseases of the genito-urinary system.*											
Balanitis	1	1.63	1	.....	.....	1	1	1.63	....	.....	....
Chancroid	2	3.27	80	.21	.34	40	1	1.63	1	1.63	
Cystitis	1	1.63	55	.12	.19	55	1	1.63	....	.....	....
Congestio renalis	1	1.63	1	.....	.....	1	1	1.63	....	.....	....
Gonorrhœa	9	14.75	60	.16	.26	6.6	9	14.75	....	.....	....
Hydrocele	1	1.63	14	.04	.05	14	1	1.63	....	.....	....
Nephritis	1	1.63	104	.28	.45	104	1	1.63	....	.....	....
Orchitis	10	16.39	64	.17	.28	6.4	9	14.75	....	.....	1
Phymosis	1	1.63	11	.03	.04	11	1	1.63	....	.....	....
Urethræ strictura	4	6.55	58	.16	.26	14.5	4	6.55	....	.....	....
Aggregate	31	50.81	448	1.23	2.01	14.4	29	47.54	1	1.63	1
10. *Diseases of the locomotive system.*											
Bursitis	2	3.27	26	.07	.11	13	2	3.27	....	.....	....
Hydrops articulorum	2	3.27	22	.06	.09	11	2	3.27	....	.....	....
Periostitis	4	6.55	100	.27	.44	25	4	6.55	....	.....	....
Synovitis	2	3.27	28	.07	.11	14	2	3.27	....	.....	....
Aggregate	10	16.39	176	.48	.78	17.6	10	16.39	....	.....	....
11. *Diseases of the integumentary system.*											
Abscessus	17	27.86	110	.3	.49	6.4	17	27.86	....	.....	....
Anthrax	1	1.63	10	.02	.03	10	1	1.63	....	.....	....
Ecthyma	1	1.63	5	.01	.01	5	1	1.63	....	.....	....
Eczema	4	6.55	35	.09	.14	8.7	3	4.91	....	.....	1
Furunculus	19	31.14	108	.3	.04	5.2	19	31.14	....	.....	....
Paronychia	4	6.55	19	.05	.08	4.7	4	6.55	....	.....	....
Pemphigus	2	3.27	16	.04	.06	8	2	3.27	....	.....	....
Rhagades	3	4.91	17	.04	.06	5.6	3	4.91	....	.....	....
Tinea	2	3.27	44	.12	.19	22	2	3.27	....	.....	....
Unguis involutis	2	3.27	15	.04	.06	7.5	2	3.27	....	.....	....
Ulcus	8	13.11	100	.27	.44	12.5	6	9.83	1	1.63	1
Urticaria	1	1.63	1	.....	.....	1	1	1.63	....	.....	....
Aggregate	64	104.91	480	1.31	2.14	7.5	61	100	1	1.63	2
Poisons.											
Alcoholismus	9	14.75	30	.08	.11	3.3	9	14.75	....	.....	....
Vulnus venenatum	1	1.63	16	.04	.06	16	1	1.63	....	.....	....
Aggregate	10	19.67	46	.12	.19	4.6	10	19.67	....	.....	....
Tumors.											
Cystoma	1	1.63	10	.02	.03	10	1	1.63	....	.....	....
Hygroma	1	1.63	10	.02	.03	10	1	1.63	....	.....	....
Aggregate	2	3.27	20	.05	.08	10	2	3.27	....	.....	....

ABLE II.—*Showing the number of cases, the discharged, the invalided, and the dead for each disease, etc.*—Continued.

Diseases and injuries.	Cases.		Number of sick-days.	Average number of men sick daily.		Average number of days under treatment.	Discharged to duty.		Invalided.		Remaining.
	No.	Per M of force.		Absolute.	Ratio per M. of force.		No.	Per M of force.	No.	Per M of force.	
Violent diseases and deaths.											
brasio	4	6.55	20	.05	.08	5	4	6.55	....	.....	....
mbustio	1	1.63	6	.01	.01	6	1	1.63	....	.....	....
ntusio	48	78.68	300	.82	1.34	6.2	44	72.11	4	6.55	....
ractura	4	6.55	42	.11	.18	10.5	4	6.55	....	.....	....
ernia	8	13.11	43	.11	.18	5.3	3	4.91	5	8.19	....
uxatio	1	1.63	14	.04	.05	14	1	1.63	....	.....	....
remma	14	22.95	120	.32	.52	8.5	11	18.03	2	3.27	1
ulnus contusum	19	31.14	80	.21	.34	4.3	19	31.14	....	.....	....
ulnus incisum	5	8.19	69	.19	.31	13.8	5	8.19	....	.....	....
ulnus laceratum	3	4.91	20	.05	.08	6.6	3	4.91	....	.....	....
ulnus punctum	3	4.91	42	.11	.18	14	3	4.91	....	.....	....
Aggregate	110	180.32	756	2.07	3.36	6.8	98	163.93	11	18.03	1
Grand aggregate	636	1,042.29	5,158	14.13	23.16	8.1	591	968.85	33	54.09	12

ABLE III.—*Showing the number of cases, the invalided, and dead for each disease on each ship on the South Atlantic station.*

Diseases and injuries.	Hartford.			Essex.			Wachusett.			Shenandoah.		
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
GENERAL DISEASES.												
1. *Zymotic diseases.*												
Erysipelas	.....	.....	....	1	.....	....	.....	....	....	.....	.....	....
Febricula	.....	.....	....	.....	.....	....	.....	....	....	2	.....	....
Febris continua simp	4	.....	....	.....	.....	....	2	....	....	4	.....	....
Febris enterica	1	.....	....	.....	.....	....	.....	....	....	1	.....	....
Febris intermittens	20	.....	....	19	.....	....	.....	....	....	3	.....	....
Febris remittens	14	.....	....	1	.....	....	.....	....	....	.....	.....	....
Parotitis	.....	.....	....	1	1	....	.....	....	....	.....	.....	....
Aggregate	39	.....	....	22	1	....	2	....	....	10	.....	....
Ratio per M	63.93	.....	....	36.06	1.63	....	3.27	....	....	16.39	.....	....
2. *Constitutional diseases.*												
Adynamia	2	1	....	2	1	....	3	....	....	.....	.....	....
Diabetes	.....	.....	....	.....	.....	....	1	....	....	.....	.....	....
Lumbago	4	.....	....	3	1	....	.....	....	....	.....	.....	....
Podagra	1	.....	....	1	1	....	.....	....	....	1	.....	....
Rheumatismus acutus	2	.....	....	10	1	....	.....	....	....	18	.....	....
Rheumatismus chronicus	6	.....	....	.....	.....	....	11	....	....	.....	.....	....
Syphilis primitiva	6	.....	....	4	.....	....	1	....	....	.....	.....	....
Syphilis consecutiva	4	2	....	.....	.....	....	5	....	....	3	.....	....
Aggregate	25	3	....	20	4	....	22	....	....	22	.....	....
Ratio per M	40.98	4.91	....	32.78	6.55	....	34.42	....	....	36.00	.....	....
LOCAL DISEASES.												
1. *Nervous system.*												
Cephalalgia	.....	.....	....	.....	.....	....	12	....	....	6	.....	....
Dementia	2	1	....	.....	.....	....	3	....	....	.....	.....	....
Epilepsia	.....	.....	....	.....	.....	....	2	....	....	.....	.....	....
Hysteria	2	.....	....	.....	.....	....	.....	....	....	.....	.....	....
Melancholia	.....	.....	....	.....	.....	....	1	....	....	.....	.....	....
Nausea marina	.....	.....	....	.....	.....	....	4	....	....	.....	.....	....

TABLE III.—*Showing the number of cases, the invalided, and dead, &c.*—Continued.

Diseases and injuries.	Hartford.			Essex.			Wachusett.			Shenandoah.		
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
1. *Nervous system*—Continued.												
Neuralgia	2	1	....	1	.....	....	10	....	....	2	.....	....
Paralysis	1	1	....	.....	.....	....	.....	....	....	.....	.....	....
Pleurodynia	.....	.....	....	.....	.....	....	1	....	....	.....	.....	....
Sciatica	.....	.....	....	1	.....	....	.....	....	....	.....	.....	....
Vertigo	.....	.....	....	.....	.....	....	1	....	....	.....	.....	....
Aggregate	7	3	....	2	.....	....	34	....	....	8	.....	....
Ratio per M.	11.47	4.91	....	3.27	.....	....	55.73	....	....	13.11	.....	....
2. *Diseases of the eye.*												
Conjunctivitis	4	1	....	.....	.....	....	3	....	....	5	.....	....
Keratitis	1	.....	....	.....	.....	....	.....	....	....	.....	.....	....
Retinæ congestio	.....	.....	....	.....	.....	....	2	....	....	.....	.....	....
Aggregate	5	1	....	.....	.....	....	5	....	....	5	.....	....
Ratio per M.	8.18	1.63	....	.....	.....	....	8.19	....	....	8.19	.....	....
3. *Diseases of the ear.*												
Otalgia	.....	.....	....	.....	.....	....	1	....	....	.....	.....	....
Otitis	.....	.....	....	3	.....	....	.....	....	....	.....	.....	....
Otorrhœa	.....	.....	....	.....	.....	....	1	....	....	.....	.....	....
Aggregate	.....	.....	....	3	.....	....	2	....	....	.....	.....	....
Ratio per M.	.....	.....	....	4.91	.....	....	3.27	....	....	.....	.....	....
4. *Diseases of the teeth.*												
Odontalgia	.....	.....	....	.....	.....	....	2	....	....	1	.....	....
Aggregate	.....	.....	....	.....	.....	....	2	....	....	1	.....	....
Ratio per M.	.....	.....	....	.....	.....	....	3.27	....	....	1.63	.....	....
5. *Diseases of the circulatory system.*												
Palpitatio	1	.....	....	.....	.....	....	.....	....	....	.....	.....	....
Syncope	.....	.....	....	1	.....	....	1	....	....	.....	.....	....
Aggregate	1	.....	....	1	.....	....	1	....	....	.....	.....	....
Ratio per M.	1.63	.....	....	1.63	.....	....	1.63	....	....	.....	.....	....
6. *Diseases of the absorbent system.*												
Adenitis	6	2	....	2	1	....	.....	....	....	1	.....	....
Aggregate	6	2	....	2	1	....	.....	....	....	1	.....	....
Ratio per M.	9.83	3.27	....	3.27	1.63	....	.....	....	....	1.63	.....	....
7. *Diseases of the respiratory system.*												
Asthma	1	1	....	.....	.....	....	2	....	....	.....	.....	....
Bronchitis acuta	11	1	....	6	.....	....	3	....	....	.....	.....	....
Bronchitis chronica	6	2	....	1	.....	....	.....	....	....	.....	.....	....
Catarrhus	.....	.....	....	14	.....	....	11	....	....	14	.....	....
Hæmoptysis	.....	.....	....	1	.....	....	.....	....	....	.....	.....	....
Laryngitis	.....	.....	....	.....	.....	....	.....	....	....	4	.....	....
Phthisis pneumonica chronica	.....	.....	....	1	.....	....	1	....	....	.....	.....	....
Pleuritis	2	.....	....	.....	.....	....	.....	....	....	2	.....	....
Pneumonia	.....	.....	....	1	.....	....	.....	....	....	1	1	....
Aggregate	20	4	....	24	.....	....	17	....	....	21	1	....
Ratio per M.	32.78	6.55	....	39.34	.....	....	27.86	....	....	34.42	1.63	....
8. *Diseases of the digestive system.*												
Cholera morbus	.....	.....	....	2	.....	....	1	....	....	.....	.....	....
Colica	1	.....	....	3	.....	....	4	....	....	5	.....	....
Constipatio	.....	.....	....	.....	.....	....	5	....	....	.....	.....	....
Diarrhœa acuta	17	.....	....	1	.....	....	10	....	....	7	.....	....
Diarrhœa chronica	.....	.....	....	.....	.....	....	.....	....	....	.....	.....	....
Dysenteria acuta	.....	.....	....	8	.....	....	.....	....	....	1	.....	....
Dyspepsia	1	.....	....	.....	.....	....	1	....	....	.....	.....	....

TABLE III.—*Showing the number of cases, the invalided, and dead, &c.*—Continued.

Diseases and injuries.	Hartford.			Essex.			Wachusett.			Shenandoah.		
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
***Diseases of the digestive system*—Continued.**												
astritis							1					
emorrhoids	2			2						2		
aryngitis							1					
tomatitis	2			2			1					
Aggregate	23			18			24			15		
Ratio per M.	32. 70			29. 50			39. 34			24. 59		
k. *Diseases of the genito-urinary system.*												
alanitis	1											
hancroid	2	1										
ystitis							1					
ongestio renalis							1					
onorrhœa	1			1			7					
ydrocele	1											
ephritis	1											
rchitis	2			4						4		
hymosis										1		
rethra: stricture	1			3								
Aggregate	9	1		8			9			5		
Ratio per M.	14. 75	1. 63		13. 11			14. 75			5		
10. *Diseases of the locomotive system.*												
ursitis	2											
ydrops articulorum				1			1					
eriostitis	1			2			1					
novitis	1			1								
Aggregate	4			4			2					
Ratio per M.	6. 55			6. 55			3. 27					
1. *Diseases of the integumentary system.*												
bscessus	6			4			7					
nthrax				1								
nthyma	1											
zema	1						1			2		
runculus	7			5			5			2		
ronychia	1			3								
mphigus							1					
hagades										3		
ines										2		
agus involutis							2					
ens	4			2	1		2					
rticaria							1					
Aggregate	21			15	1		19			9		
Ratio per M.	34. 42			24. 59	1. 63		31. 14			14. 75		
Poisons.												
leoholismus	1			8								
ulus venenatum				1								
Aggregate	1			9								
Ratio per M.	1. 63			14. 75								
Tumors.												
ystoma	1											
ygroma				1								
Aggregate	1			1								
Ratio per M.	1. 63			1. 63								
Violent diseases and deaths.												
mbustio	1											
ibratio				1			1			2		
ontusio	19	4		7			13			9		

TABLE III.—*Showing the number of cases, the invalided, and dead, &c.*—Continued.

Diseases and injuries.	Hartford.			Essex.			Wachusett.			Shenandoah.		
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
Fractura	1	.....	....	1	.....	....	.....	....	....	.....	.....	....
Hernia	5	4	....	3	.....	....	1	....	....	1	1	....
Luxatio	1	.....	....	.....	.....	....	.....	....	....	.....	.....	....
Stremma	7	2	....	.....	.....	....	4	....	....	3	.....	....
Vulnus contusum	9	.....	....	4	.....	....	1	....	....	5	.....	....
Vulnus incisum	.....	.....	....	2	.....	....	.....	....	....	3	.....	....
Vulnus laceratum	.....	.....	....	2	.....	....	.....	....	....	1	.....	....
Vulnus punctum	2	.....	....	.....	.....	....	1	....	..	.....	.....	....
Aggregate	45	10	....	20	.....	....	21	....	....	24	1	....
Ratio per M	73.77	16.39	....	32.78	.....	....	34.42	..	....	39.34	1.63	....
Grand aggregate	207	24	....	149	7	....	159	....	....	121	2	....
Ratio per M	339.34	39.34	....	244.26	11.47	...	260.65	....	....	198.36	3.27	....

NAVAL HYGIENE.

HARTFORD.

During the entire first quarter and 69 days of the second quarter, 1879, the Hartford lay at anchor in the harbor of Montevideo; during the remainder of the second quarter 11 days were spent at Buenos Ayres, 8 at Colonia, and 3 in the Rio de la Plata (at sea). During the third quarter 21 days were spent at Montevideo, 57 at Rio de Janeiro, and 14 days at sea. In the fourth quarter 48 days were occupied in making passage from Rio de Janeiro to Boston, the remaining 17 days (to December 4, date of going out of commission) were spent at the latter port. During the entire year this vessel was in port 304 days, and at sea 34 days.

The following facts are gleaned from the report of Fleet Surgeon A. C. Gorgas:

During our stay at Buenos Ayres a slight but rather remarkable epidemic of malarial fever occurred on board the ship. There was no fever either at Buenos Ayres, on the southern bank of the La Plata, or at Colonia, on the opposite shore. The weather was fine, and only somewhat less windy than at Montevideo; there was a slight elevation of temperature, and we were anchored at least seven miles from the nearest shore. There were about eighteen cases, seven of which assumed the remittent type, the rest being intermittent, and chiefly quotidian. In every case there was accompanying bronchitis or severe bronchial catarrh. Several cases of bronchitis, with no well-marked periodical fever, yielded promptly to treatment with quinine.

This outbreak of malarial disease seems to have been due either to miasma brought from Rio de Janeiro, lying latent in the systems of the persons affected, and excited by local but unappreciable causes, or from malaria arising from the alluvium in the muddy stream, brought from distant marshes. The cases were principally original, and not relapses of the disease we had at Rio.

This little epidemic terminated as suddenly as it had appeared. When we arrived at Colonia we seemed to have got away from the malarial influences, and most of the cases became convalescent.

We returned to Montevideo early in May, and remained there until after the middle of July. On the 2d of August, after a two weeks' voyage, we arrived once more at Rio de Janeiro, six weeks later than last year. We had much less malarial fever in 1879, on board ship, than during 1878. This was partly due to our somewhat shorter stay at Rio de Janeiro, but principally to the prophylactic use of quinine.

Quinine was given daily to all those who had malarial diseases during the cruise,

and to all who applied for it at the dispensary. The greatest care has to be exercised to distinguish between some of the forms of miasmatic fever and yellow fever. In one fatal case of a marine belonging to the Hartford, who died at the Misericordia hospital in 1878, there was yellow skin, albuminuria, and the immediate cause of death was uræmia. This was a relapse case of bilious remittent.

Conjunctival congestion, redness of the skin of the thorax, and albuminuria are the distinctive signs of yellow fever here, but these may all be remarked in malarial cases, and some may be absent in certain stages of yellow fever. To make sure of keeping the disease out of the ship, all fever cases should be sent ashore for hospital treatment. The foregoing figures show that miasmatic fevers are greatly to be dreaded at this place. They, like the yellow fever, are most frequent and severe during the summer months of January, February, and March, but not diminishing like yellow fever in the same proportion during the cooler season.* Previous to 1870, typhoid fever was a rare disease in Rio, but since then, and principally since the epidemic of yellow fever in 1873, it has become very much more frequent, the greatest number of cases occurring from March to June. So that the greatest number of cases of miasmatic fevers occur during the height of the yellow fever, and the greatest number of cases of typhoid during its recession.

Dr. Torres Homeur classifies the miasmatic diseases of Rio de Janeiro as follows, viz: 1, simple intermittent fever; 2, marked intermittent fever; 3, simple remittent fever; 4, pseudo continued fever; 5, typhoid paludal remittent fever; 6, remittent fever of hot countries; and 7, pernicious fevers. The pernicious fevers are described by Dr. Torres Homeur under twenty-three heads, according to the form the fever takes, such as the neuralgic, the meningo-encephalic, the pleuro-pneumonic, the comatose, &c.

A form of lymphatitis is considered by some of the physicians of Rio de Janeiro to be of miasmatic origin, and to be a form of pernicious fever called the lymphatic. In the health inspection report for 1878 there are 97 deaths from lymphatitis given.

The extensive excavations, and the long lines of trenches opened by the company of "city improvements" for the laying of drains and other pipes, have no doubt increased the amount and severity of miasmatic disease during the last few years. During 1878 it was observed that along the streets thus opened all the epidemic diseases, *not excluding variola*, were markedly more numerous and severe than in other parts of the city.

The proportion of different classes of disease for this year is the same as given in my last report. During this year the yellow fever has been more or less epidemic in most of the northern parts of Brazil, particularly among the shipping.

I have already, in former reports, represented the danger of coming here during the months of epidemic yellow fever—*i. e.*, between the 1st of November and the 1st of June. In view of this, it seems to me that the naval storehouse is badly placed at this port.

On the island of Enxadas, where the storehouse stands, there have always been cases of yellow fever in the severe epidemics; and two deaths from miasmatic fever—one of the crew of the Guard and the other of an English man-of-war's man—were clearly traceable to exposure at the storehouse.

The port of Montevideo offers quite as great advantages, in a general way, as Rio, and is perfectly free from endemic disease.

The berth-deck of the Hartford was kept lacquered and as free from dampness as possible; the bilges were clean; there was no smell of bilge water. The gun-deck was seldom wetted, and never in damp weather, excepting on one or two occasions by mistake. The small number of sick on board the Hartford, particularly during the latter half of the year, when long voyages were made, and the ship lay for two months in the harbor of Rio de Janeiro, was, to a great extent, due to the care taken in matters of hygiene, and to the hearty sympathy of the commanding officer with the views and his attention to the recommendations of the medical officers in that respect.

The average temperature of the spar-deck during the month of January, while we were lying at Montevideo, was 21°.64 C.; that of the berth-deck at the same time was 22°.87 C.—a difference of 1°.23 C.

The following shows the relative humidity during the same month, 100 representing saturation, viz:

	10 a. m.	4 p. m.	10 p. m.
Spar-deck	63.16	61.35	63.13
Berth-deck	67.9	69.2	67

During the month of February the temperature of the spar-deck averaged 22°.69 C.; that of the berth-deck 23°.11 C.; difference, .42° C.

Relative humidity for February at—

	10 a. m.	4. p m.	10 p. m.
Spar-deck	65.15	64	71.78
Berth-deck	72.78	71.82	73

*Estudo clinico sobre as Febres do Rio de Janeiro, pelo Dr. João Vicente Torres Homeur.

The average temperature of March of spar-deck was 21°.30 C.; of berth-deck was 22°.48 C.; difference, 1°.18 C.

Relative humidity for March averaged, spar-deck, 67.08; berth-deck, 69.72.

There were eleven examinations of the quantity of carbonic acid on the berth-deck taken at various times during the quarter, always at night; the average of these was, for the month of January, 3.03 per feet; for the month the month of February, 1.049; and for March, .7793. The ship lay at Montevideo during this quarter.

The temperature during April, part of which was spent at Montevideo and part off Buenos Ayres and at Colonia, averaged on the spar-deck 18°.71 C., and on the berth-deck, 21°.51 C.; difference 2°.80 C.

The relative humidity was as follows:

	10 a. m.	4 p. m.	10 p. m.
Spar-deck	70 1/10	68 3/10	72
Berth-deck	70 1/10	70 7/10	71 1/10

Average of carbonic acid on the berth-deck (five observations), .752 per thousand feet. Average number of sick per diem, exclusive of injuries, 4 1/10.

For May the average temperature was 15°.93 C. on the spar-deck, and 20° C. on the berth-deck; difference, 4.07

The relative humidity was at—

	10 a. m.	4 p. m.	10 p. m.
Spar-deck	72 1/10	68 1/10	69 3/10
Berth-deck	66 3/10	68 1/10	69 1/10

The average of carbonic acid (four observations), .653, and of patients, exclusive of injuries, 5 1/10.

For June the average temperature of the spar-deck was 12°.62 C.; of the berth-deck, 18°.85 C.; difference, 6°.23 C.

The relative humidity was at—

	10 a. m.	4 p. m.	10 p. m.
Spar-deck	74 3/10	69 7/10	70 1/10
Berth-deck	66 3/10	65 1/10	67 1/10

Average of carbonic acid on the berth-deck (five observations), 1.309.

Average number of patients, exclusive of injuries, 4.

The latter half of May and the month of June were spent at Montevideo.

The berth-deck was heated by means of the steam coils during these months; the heat being turned on in the early morning and again in the evening, during the middle of the day and at night the deck being allowed to cool.

During July the average temperature of the spar-deck was 15°.40 C., of the berth-deck, 19°.10 C.; difference, 3°.78 C.

The relative humidity was at—

	10 a. m.	4 p. m.	10 p.m.
Spar-deck	73.29	72.42	75.16
Berth-deck	73.22	71.84	73.32

Average of carbonic acid on the berth-deck (four observations), 1.297, two taken at sea. Average temperature during August of the spar-deck, 21°.67 C.; of the berth-deck, 32°.63 C.; difference, 1°.56 C.

The relative humidity was, at—

	10 a. m.	4 p. m.	10 p. m.
Spar-deck	69.93	66.61	69.61
Berth-deck	74.06	70.77	72.22

Average of five observations of the proportion of carbonic acid on the berth-deck, 1.599; average number of patients, exclusive of injuries, 2.8.

Average temperature of September on the spar deck, 21°.46 C.; of the berth-deck, 22°.95 C.; difference, 1°.49 C.

The relative humidity was, at—

	10 a. m.	4 p. m.	10 p. m.
Spar-deck	70.30	67.80	72.83
Berth-deck	73.56	70.07	72.83

The average of five observations of the proportion of carbonic acid on the berth-deck was 1.183; average number of patients, exclusive of injuries, 5.23.

These last two months were spent at Rio de Janeiro. The whole of the next month, October, was spent at sea.

The average temperature was: of the spar-deck, 26°.15 C.; of the berth-deck, 26°.26 C.; difference 0°.11 C.

The relative humidity was, at—

	10 a. m.	4 p. m.	10 p. m.
Spar-deck	73.6	72.6	73.8
Berth-deck	74	75	75.7

The average of carbonic acid (four observations), was .480; of patients, exclusive of injuries, 2.32. The wind-sails were set during all these observations, and of course a smaller number of persons were sleeping on the deck during the regular sea watches; still, the difference between the average of this month and last in the proportion of carbonic acid is remarkable.

Part of November was spent at sea, and part (about thirteen days) at Boston. The average temperature of the spar-deck was 15°.28 C.; of the berth-deck, 22°.65 C.; difference, 7°.37. Steam-heating accounts for this great difference, as well as for the greater dryness of the berth-deck, as shown by the following statement of the relative humidity, viz, at—

	10 a. m.	4 p. m.	10 p. m.
Spar-deck	71.52	68.68	70.28
Berth-deck	65.60	62.80	62.80

The average of four observations gave the proportion of carbonic acid on the berth-deck as .449 per thousand cubic feet.

These observations were carefully made, and were doubtless correct; but the quantity seems very small, considering that the air-ports on the berth-deck were closed and that no wind-sails were set. No doubt the difference in the temperature of the air within and without secured a free ventilation notwithstanding the closing of so many of the apertures.

The small proportion of sick, exclusive of injuries, is remarkable, and exhibits a wholesome state of the ship. Indeed, for the last year the number of preventable diseases has been very small. Excluding injuries and malarial and venereal diseases, there were but 32 admissions to the sick list of the Hartford from the 1st July to the 4th December.

I have given the statistics of the thermometer, relative humidity, and carbonic acid to show under what atmospheric conditions such a favorable state of health was maintained.

ESSEX.

During the first quarter, 1879, the Essex was in port at Montevideo 57 days, at Port Stanley 4 days, and at sea 29 days. In the second quarter 81 days were spent at Montevideo and 10 at sea. In the third quarter 21 days were spent at Montevideo, 12 at Rio de Janeiro, 6 at Buenos Ayres, 1 at Bahia, and 52 at sea. During the 22 days in which the Essex was in commission in the fourth quarter, 12 days were spent at Philadelphia navy-yard and 10 at sea. (Passage from Rio de Janeiro to Philadelphia, occupying from September 2 to October 10.) During the entire year this vessel was in port 246 days, and at sea 49 days.

In his report of the sanitary condition of the ship, Passed-Assistant Surgeon H. M. Moore says that—

Yellow fever occurs sporadically in Rio all the year round, and it frequently assumes an epidemic character in summer. Every year a number of cases of the disease appears in the shipping of the port, and at times its ravages there are proportionately greater than in the city. This is supposed to be due to the exhalations from the water, which is rendered impure by the accumulation of sewage, the bay being almost completely land-locked. There are several forms of malignant fever recognized by the local physicians, but it would be very difficult to distinguish them from genuine yellow fever except by one who has had frequent opportunities to compare the different varieties. Therefore, the few cases which appeared in this ship, those resembling strongly yellow fever, as described by the teachers of the United States, were put down as such in the quarterly reports, although the physicians of the hospitals to which they were transferred for treatment, pronounced them to be bilious fever. One of these cases died at the Misericordia Hospital, within four days from accession of first symptoms, having had black vomit, jaundice, and suppression of urine; and others recovered after having had well-marked jaundice, and other symptoms indicative of true yellow fever. The surgeons of the Hartford and the Guard had a similar experience. Now, if these were not true cases of yellow fever, they at least prove the existence of a dangerous form of fever at Rio in the healthiest season of the year. Rio is for this reason an undesirable place for a naval rendezvous even in winter, and when it is visited by vessels of our Navy too great precautions cannot be taken to prevent an outbreak of the disease on board ship. For reasons above set forth the location of the United States naval storehouse (on an island in the unhealthiest part of the harbor) seems to be very bad. At least one fatal case of fever (that of the Guard in 1878) had its origin

traceable to exposure there. It is important to note this ill-advised location, for, in addition to the necessary exposure to which officers and men are subjected in visiting the place on duty, there is the more serious danger of infecting a ship's company from this source by fomites carried on board in stores of various kinds.

Small-pox at times and phthisis constantly prevail at Rio to an alarming extent, but I have thought proper to confine these brief remarks to yellow fever and its kindred diseases, on account of the greater danger to which vessels of the United States Navy are exposed from this source.

SHENANDOAH.

The Shenandoah was in the South Atlantic fleet the fourth quarter 1879, during which she was in the ports of Rio de Janeiro, Brazil, and Montevideo, Uruguay, 27 days, and at sea 65 days.

Fleet-Surgeon M. Bradley remarks about the hygiene of this ship that—

The complement of the ship is 242, of whom 31 are officers.

The following cursory description of the vessel, armament, and engines, together with general remarks, may be considered the preface to the report, and therefore not out of place.

The Shenandoah is a 2d-rate, ship-rigged, built of live oak, and registers 929 tons; length over all, 257.6 feet; extreme breadth, 38.6 feet; draft forward (loaded), 15.7 feet; draft aft, 17.2 feet; mean draft, 16 feet. Armament—2 8-inch rifles, pivots, mounted on iron Marsilly carriages; 6 9-inch broadside, on iron carriages; 1 60-pounder, rifle, on top-gallant forecastle; 2 20-pounders also on top-gallant forecastle and employed for saluting purposes; 1 3-inch steel howitzer, and 1 light smooth-bore on the poop, and 1 Lowell battery gun.

Engines—2 back-acting, 1,200-horse-power, non-lifting propeller; greatest consumption of coal in twenty-four hours, 35 tons; highest speed under steam, in smooth water, 8.5 knots per hour; speed under two-thirds power, 6 knots; capacity of bunkers, 300 tons anthracite coal.

The sick-bay of the Shenandoah is small, dark, and contracted, triangular in form, and wedged in between the eyes of the ship. Two circular glass ports on hinges give but a somber light, and, being near the surface of the water, are seldom, if ever, open, and cannot, therefore, be employed as ventilators. A metallic cylinder, 18 inches in diameter, passes upward from this part of the ship to the top-gallant forecastle, where it is surmounted by a revolving hood; this tube is the ventilator of the sick-bay and the forward part of the berth-deck. Capacity of sick-bay 1,105 cubic feet; four patients in cots or hammocks crowd this pent-up room, and consequently each has only 276 cubic feet of air space when he should have at least double that amount.

Berth-deck.—The worst feature of this is that it has not a clear run aft to the steerage, being interrupted by the coal-bunkers, extending upward to the spar-deck, and by the intermediate bulkhead of the fire-room. All communication with it is through the two forward hatches. The sides of this deck are furnished with sixteen glass ports on hinges: four round, 6 inches in diameter, and 12 square, or rather oblong, 12 by 8 inches. Unfortunately they cannot be opened unless in very smooth weather. In addition to the two hatches there are two glass deck-plates, 15 inches in diameter. In pleasant weather they are removed, and the openings protected by copper hoods, which serve as ventilators. Capacity of berth-deck, 13,065 cubic feet. Supposing the 211 men attached to the ship to swing between decks, each would have an air space of only 62 feet. Of the 211 men, 64 swing under the top-gallant forecastle, and each of the remaining 147 men has an air space of 88 cubic feet. The number, 147, is still further reduced by the men on watch, and, at this season of the year, by deck sleepers.

Steerage.—This is provided with one small hatchway, two glass deck plates, and five square glass ports, three on the starboard and two on the port side. Of the cubical contents, 3,384 feet, each of the twelve occupants has an air space of 282 feet.

Ward-room communicates with the steerage, has a large hatch opening into the after port, two deck lights, six square and eight circular ports. At the extreme end, in the pantry, is the horizontal opening (oval) of the ventilator, which passes through the cabin to the poop. The greater and lesser diameters of the opening are 14 and 10 inches respectively. Cubic contents of ward-room 9,048 feet, giving to each of the 13 officers an air space of 696 feet.

Bilges are ventilated by twenty-four (twelve on a side) channels, concealed within the skin of the ship. Their orifices are inboard, immediately below the hammock nettings, and protected by metallic gratings, 3 inches in diameter. These air-passages are confined to the middle third of the ship.

The shaft alley is ventilated by a pipe leading into the ventilator at the junction of that from the wardroom. The bilges and shaft alley are kept scrupulously clean,

whitewash is freely applied, and those parts that cannot be reached with the broom are thoroughly cleansed by a stream of water from the force-pump.

Heating—by steam passing through forty-eight iron pipes four feet long, an inch in diameter, and compactly arranged in vertical rows three deep. The apparatus is nothing more than the ordinary heater of public buildings. There are two on the berth-deck, one in the steerage, and two in the ward room. Their services have not yet been required, as an additional amount of heat at this time of year would be an inconvenience instead of a comfort.

Water.—Shortly after the ship sailed from New York, the potable water furnished by the distilling apparatus was observed to have a milky or opalescent hue and a decidedly soapy and disagreeable taste. The former was dependent on lime in the form of whitewash accidentally left in some of the water tanks, and the taste owing to alkaline salts. By substituting clean tanks a limpid, transparent liquid was obtained, beautiful to behold but unpleasant to the palate. The charcoal filter was then removed and the water from the distiller permitted to enter the tanks directly without passing through any kind of medium. The result was satisfactory. The water when examined was found to possess the negative qualities of pure, wholesome water, colorless, odorless, and tasteless, with the property of satisfying thirst. Distilled water furnished by the above simple process is alone used for drinking purposes and may account for the small number of cases of diarrhea and dysentery. The distiller furnished about 40 gallons per hour, or 1,000 per diem.

Provisions.—The salted meats, ship-bread or biscuit, white beans, and pickles, which make up the ordinary ration, doubtless give satisfaction to the men, as I have not heard the slightest complaint against any of the articles issued by the pay department. The above were supplied to the wardroom, from time to time, on the passage from New York to Rio, and were of excellent quality.

Clothing.—The remarks on provisions apply to wearing apparel and shoes, the absence of all fault-finding being a guarantee of the durability of the latter and the fitness of the former for general and special wear.

The Shenandoah was commissioned on the 8th of September, 1879, and sailed from Sandy Hook the 10th of October following for the Brazils, crossing the equator immediately south of the jagged, rocky isle of St. Paul, and arrived in the magnificent bay of Rio de Janeiro on the afternoon of December 1 of last year, after a run of fifty-two days. The passage was very disagreeable, rough, at times boisterous and stormy, winds baffling, squally, and accompanied by rain. The vessel rolled heavily and frequently shipped green seas; nevertheless, she proved herself to be remarkably buoyant and seaworthy.

During the ship's stay of five days at Rio, we learned from an official source that ten deaths from yellow fever had occurred in the city during the month of November, and nine deaths from the same cause in the previous month.

Deeming the information of vital importance, liberty was not granted to the men, no wash clothes sent on shore, and no coal received in the ship's bunkers; necessaries only were taken on board.

Left Rio December 6, last year, and arrived off Montevideo 18th following, when the ship was placed under observation by the health officer for a period of three days.

At this season of the year when Rio and other Brazilian ports are supposed to be wholly or comparatively healthy, the Montevidean authorities impose a quarantine of fifteen days on all vessels arriving from them, dating the commencement of the quarantine from the time they put to sea and subtracting the number of days engaged in making the passage to Montevideo from the fifteen days' quarantine.

The Shenandoah had been twelve days at sea, and was obliged to fly the yellow flag three days.

WACHUSETT.—The Wachusett was at the Boston navy-yard the first two days of the fourth quarter, 1879, at Rio de Janeiro 8 days, and at sea 82 days, a portion of the latter being occupied in the passage from the United States.

THE MEDICAL TOPOGRAPHY AND SANITARY REPORTS OF THE SOUTH ATLANTIC STATION.

REPORT OF MEDICAL INSPECTOR A. C. GORGAS, FLEET SURGEON.

MONTEVIDEO.

This city and neighborhood were very healthy throughout the summer and autumn. The heat here is moderate and agreeably tempered by the sea breeze. The average temperature of January was 21°.64 C., and of February, the hottest month of the year, 22°.69 C.

The quarantine regulations were strictly carried out, all vessels arriving from Brazilian ports being obliged to remain at the island of Flores fifteen days, and to submit to a thorough examination and inspection.

No cases of yellow fever appeared in Montevideo this year.

In 1878 there were 2,937 deaths in the city of Montevideo from various causes, as shown by the following table. The classification of 1,915 of these by Dr. Rappaz corresponds with that of 1875 given in my last year's report, especially in the proportion of diseases of the respiratory system, viz:

Fevers*	137
Diseases of the circulatory system	118
Cerebro-spinal system	258
Respiratory system	634
Nervous system	70
Digestive system	249
Accidents	102
Diverse	347
	1,915
Undiagnosed	1,022
Total	2,937

Under the head of "Diverse" diseases are included alcoholism, dropsies, cancer, erysipelas, cystitis, scrofula, old age, &c.

Of the fevers 57 were typhoid, and 34 small-pox. Of the pulmonary diseases, which form about one-third of the whole number, 284 were of phthisis.

We left Montevideo on the 16th of April, and arrived at the anchorage near Buenos Ayres the following day.

Buenos Ayres is a handsome city of about 234,000 inhabitants, built upon a level of alluvial clay on the southern bank of the Rio de la Plata. It is regularly laid out, the streets crossing at right angles and forming about 705 squares. There are fine public buildings, numerous hospitals, and a magnificent jail. The La Plata is very wide in front of the city, presenting the appearance of a great yellow sea. The water is quite fresh, but is very muddy; and uprooted plants and

* From Memoria de las Reparticiones Municipales de Cementarios y Rodados, presentada à la Corporacion Municipal por el Director de esos ramos. (P. E. Banzá.)

marsh-weeds were constantly floating past the ship. On account of the shallowness of the river, vessels are obliged to anchor at a considerable distance from the town, and the Hartford lay about twelve miles away. Buenos Ayres is a rapidly growing place. The population in 1869 was 178,000, or about three-fourths of what it now is, and the population has doubled in the last twenty-five years.

From its low, level situation the city is difficult to drain, and the rapid spread of epidemics here has been ascribed to its flatness and to the permeation of the soil by sewage.

A system of sewerage is now constructing which is designed to carry and empty its contents far below the city.

In 1867–'68 and in 1874 there were epidemics of Asiatic cholera here, and in 1871 the fearful one of yellow fever mentioned in my last report.

The mortality of Buenos Ayres in 1878 was 5,536; about 23.6 per thousand. Of this number, 25.36 per cent. was from diseases of the respiratory system, 142 were cases of fever, of which 114 were typhoid; 1,457 of the deaths occurred in the hospitals. The following are the principal of these, viz: The Men's General, the Women's General, the San Roque, the Children's, the Military, the Hospital de las Mercedes, the Hospital for Insane Women, the Foundling, the Mendicants', the French, the English, the Italian, the German, and the Spanish.

Of the 5,536 deaths, 4,014 were of natives, and 1,522 of foreigners, and 1,851 were of children under one year of age.* These figures show how large a proportion of the population is foreign. The immigrants are principally Italians and Spanish, in the proportion of about three of the former to one of the latter.

The year 1878 was exceptionally healthy in Buenos Ayres, the death rate for ten years—excluding 1873, the year of the yellow fever—having been 28.6 per thousand, which is a little above the average at Montevideo.

COLONIA is a small unimportant town; it possesses a quiet harbor, and is a very healthy place. The ship lay within half a mile from the town.

The attractions here are not so great as at Buenos Ayres or Montevideo, but it is a good place to give the men liberty notwithstanding. Horses are to be hired very cheaply, and riding is usually a favorite amusement with sailors. Entertainment is had at reasonable prices, and there is less temptation to drink and less danger of venereal disease than at the larger towns. General liberty was not given here, but the men who went ashore amused themselves with field sports, and returned to the ship clean and sober.

REPORT OF SURGEON M. BRADLEY,

FLEET SURGEON, SOUTH ATLANTIC SQUADRON.

RIO DE JANEIRO, the capital of the vast country known as Brazil, or the Brazils, is just within the southern tropic, and with a population of nearly half a million, is situated on the right side of the magnificent bay of the same name, in latitude 22° 56′ south, longitude 43° 9′ west. The country on both sides of the bay is hilly and mountainous. The city proper is on a plain composed of disintegrated rock washed down from the sides of the hills in its rear and on its flanks. The city and scattered

* These and the foregoing figures are taken from Apuntes sobre el Movimento de la Poblacion de la Ciudad de Buenos Aires durante el año 1878, &c., por el Dr. Emilio R. Coni.

houses on the summits and sides of the hills present a pleasing and picturesque appearance from the bay, and when illuminated at night probably the twinkling scene is not equalled elsewhere.

Of the scourges of Rio, pulmonary consumption heads the list of mortality; the next, yellow fever, followed by typhoid and typhus, then small-pox, and lastly malarial cases of which pernicious fever is the worst form. The city hospitals were not visited for prudential reasons.

MONTEVIDEO.—The two most notable objects are the mount from which the city derives its name and situated at one limb of the crescent like harbor, and the cathedral in the middle of the city, near the other extremity.

Montevideo is the capital of the Republic of Uruguay, on the left bank of the Rio de la Plata, about 115 miles from the mouth, latitude 34° 53′ south 56° 13′ west. The population, 110,000, is mixed, composed of Spaniards, Italians, Americans, French, and English; the Spanish language is universally spoken.

The city is compactly and solidly built on a peninsula seven-eighths of a mile long from the point to the head of the harbor where it joins the main-land, and about one-third of a mile wide. The sides of this neck of land slope to the water forming natural declivities for drainage. The streets cross each other at right angles, are of good breadth, with Belgian pavements, and very clean. The surrounding country is low and gently rolling, and from a superficial observation of the soil there are no agencies at work to generate fevers other than those of a mild type.

Climatology.—The ship did not remain sufficiently long at Rio to obtain data relative to the climate. The average height of barometer on board for five days was 30.09 inches, and that of the thermometer 78° Fahr. After the ship arrived in the harbor a heavy rain inundated the water-side of Rio; previous to it there had been a long drought.

At Montevideo, the average height of barometer on board for fourteen days was 30.05 inches; of thermometer for the same time, 74° Fahr. The highest barometer was 30.37, and the lowest, 29.70 inches. The average temperature for the city in summer is 80° Fahr.; at times the mercury runs up to 100° Fahr.; the average temperature in winter is 38° Fahr.; snow is never seen. The winds from the NE., N. and NW. points of the compass are hot and scorching, and correspond to SE., S. and SW. winds of the northern latitude; the winds E., SE., and S., are cool, moist and inclined to be squally; they correspond to the E. NE. and N. winds of the northern hemisphere. Those from the W., WSW. and SW. are not the gentle zephyrs of the north, but tempestuous, and blow with violence for a few hours or for several days, rendering communication with the shore difficult and dangerous.

These winds are called *pamperos*, and are divided into local and general or dirty (*sucio*). The duration of the former may be for a few hours only; the sky is usually clear and the barometer stationary or rising; the latter continue from two to five days, accompanied with rain, thunder, and lightning, and their force and reduced temperature are felt far at sea; the barometer is low.

The pamperos arise as far west as the Andes Mountains, down the eastern slope of which they rush to fill the partial vacuum caused by the rising rarefied atmosphere of the pampas or plains of Buenos Ayres and Patagonia.

On the afternoon of the day the Shenandoah entered the mouth of the river Plata, 17th ultimo, the sky and clouds presented a very singular appearance. The former was unusually blue, but smoky, as if viewed through a fine gauze; the thin, scaly, fleecy clouds and mares' tails resembled translucent horn, and shone with a pearly, nacreous lus-

those near the sun exhibiting all the colors of the rainbow. With back towards the western sun, the sky, the smooth-rolling sea, the in the distance and the approaching land, all were illuminated with sty glare, as if proceeding from an immense electric light. The sphere was filled with myriads of insects of all sizes, colors and iptions, nearly all the orders being represented—*hymenoptera*, *co-ra*, *diptera*, *orthoptera*, *neuroptera*, *lepidoptera*, etc.—the heavy-buzz-eetles, the not-to-be-handled bees and wasps, dragon-flies darting ward and forward, gaudy fluttering butterflies, insects with wings , others with them folded transversely and others longitudinally; ry, golden cobwebs (*virgin's hair*), glistening in the rays of the set-sun, floated everywhere and streamed from every part of the ship's ng. When the pilot came on board, he said such a condition of tmosphere portended a pampero; and, sure enough, at one o'clock night the wind blew violently and greatly impeded the ship's prog-to Montevideo.

SANITARY CONDITION

OF THE

PACIFIC STATION.

120
135
150
165
180
165
150
RUSSIAN
AMERICA
S I A
HINA
Shanghai
JAPAN ISLANDS
CHINA SEA
PHILIPPINE ISLANDS
Caroline Islands
Kings Mill Group
BORNEO
NEW GUINEA
SAMOA Is
AUSTRALIA
Sidney
Port Jackson
Adelaide
Melbourne
Port Phillip
Tasmania I.
Auckland
NEW ZEALAND
Auckland I.
PACI
STATI
Antarctic Continent
120
135
150
165
180
165
150
Published by the Bureau of Medicin

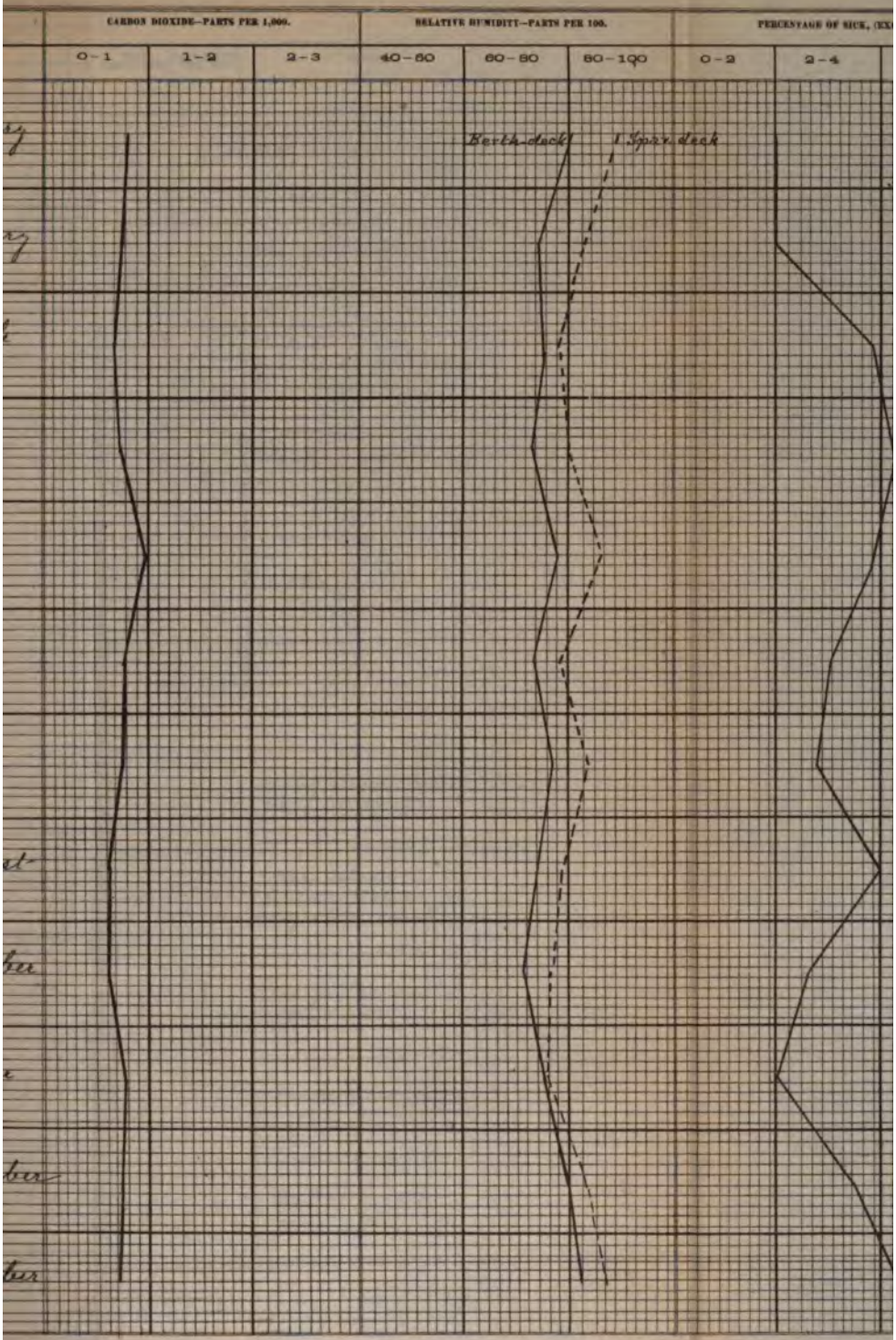
U. S. S. Pensacola

Month	Day	Hour	Carbon Dioxide Parts per 1000 (0 – 1 / 1 – 2)	Sea or Port	Sail or Steam	Berth deck ports	Gun deck ports
1879	5			At Sea	Sail	Closed	Open
February	13			" "	"	"	"
	19			" "	Steam	"	"
	22			" "	Sail	"	Partly Open
	24			" "	"	Open	Open
	10			At Sea	Sail	Closed	
March	16			In Port		Open	Open
	20			" "		"	"
	28			" "		"	"
	8	10 p.m.		In Port		Open	Open
	10	" "		" "		"	"
April	14	" "		" "		"	"
	22	" "		At Sea	Steam	Closed	"
	25	" "		In Port		Open	"
	6	10 p.m.		In Port		Open	Open
	13	" "		" "		"	"
May	20						
	23	" "		" "		"	"
	24	" "		" "		"	"
	27	" "		" "	Steam for distilling	"	"
	30	" "		" "		"	"
	7	5.30 A.M.		In Port		Open	Closed
June	12	10 p.m.		" "		"	Open
	18	4.30 A.M.		At Sea	Steam	Closed	Closed
	24	10 p.m.		In Port		"	"
	28	5.30 A.M.		" "		Open	Open
	5	4.30 A.M.		At Sea	Steam	Closed	Closed
	9	10 p.m.		In Port		Open	Open
July	15	" "		" "		Closed	Closed
	19	5.30 A.M.		" "		"	"
	25	" "		" "		"	"
	29	" "		" "		Open	Open
	5	10 p.m.		In Port		"	"
	8	4 A.M.		" "		Closed	Closed
August	16	5.30 A.M.		" "		Open	Open
	19	10 p.m.		At Sea	Steam	Closed	Closed
	26	" "		In Port		"	"
	27	4 A.M.		" "		"	"
	3	10 p.m.		In port		Open	Closed
	7	10 p.m.		" "		"	"
September	16	10 p.m.		At Sea	Steam	Closed	Closed
	23	10 p.m.		In Port		Open	Open
	28	4 A.M.		" "		"	"
	9	10 P.M.		In Port		Open	Closed
	12	4 A.M.		" "		"	"
October	14	10 P.M.		" "		"	"
	22	" "		" "		"	"
	25	4 A.M.		" "	Distilling Water	"	"
	28	10 P.M.		At Sea	Sail & Steam	Closed	"
	31	4 A.M.		" "	" "	"	"
	4	10 p.m.		In port		Open	Closed
	11	" "		" "		"	"
November	18	" "		" "		"	"
	25	" "		" "		"	"
	28	4 A.M.		" "		"	"
	2	10 p.m.		" "		Open	Closed
	9	" "		" "		"	"
December	16	" "		" "		"	"
	23	" "		" "		"	Open
	29	" "		" "		"	Closed

In all examinations except the last, air taken fr

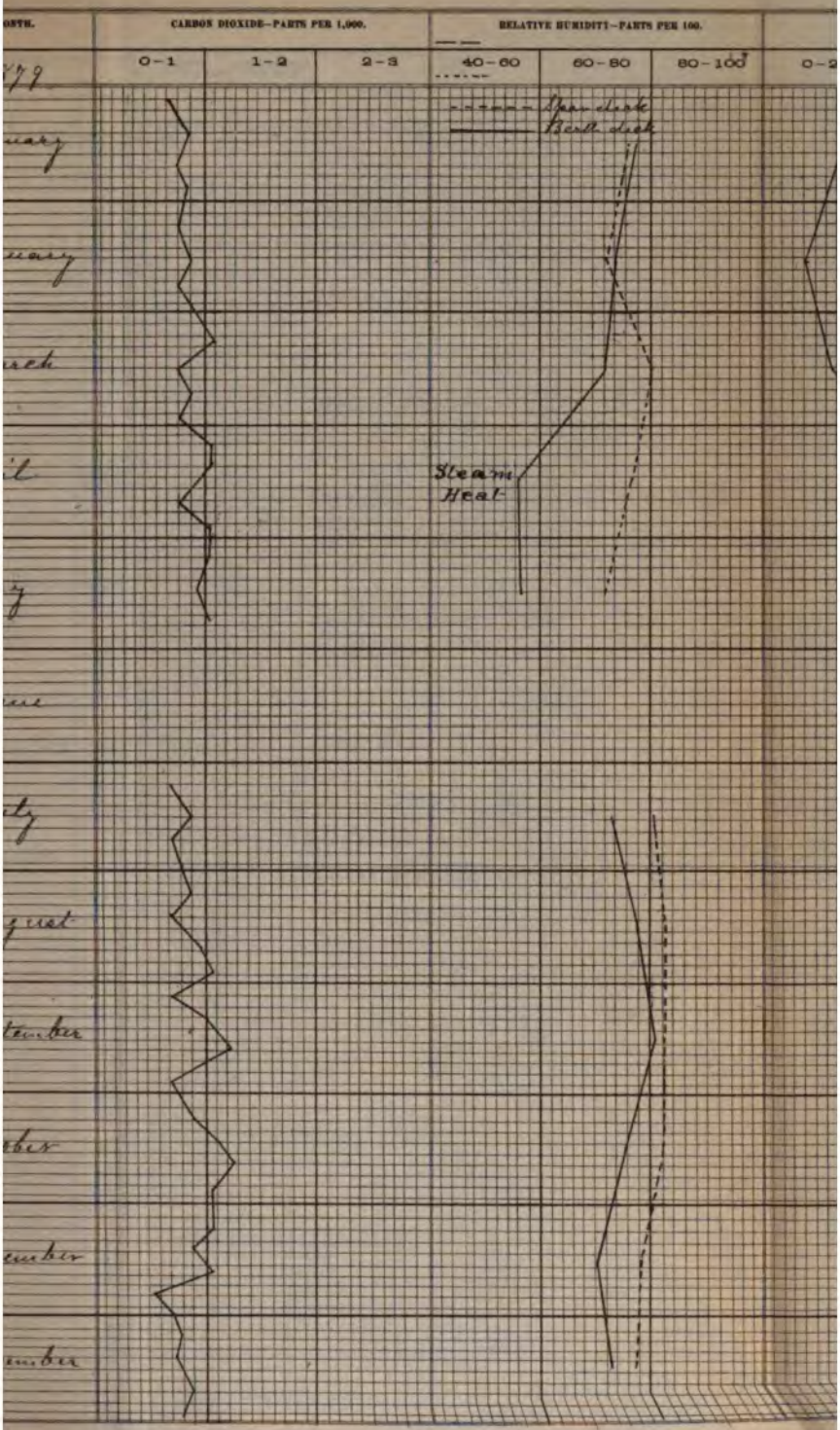
* Dec. 29th Air from Sick-bay forward, under bow

U. S. S. Pensacola . Med. Du



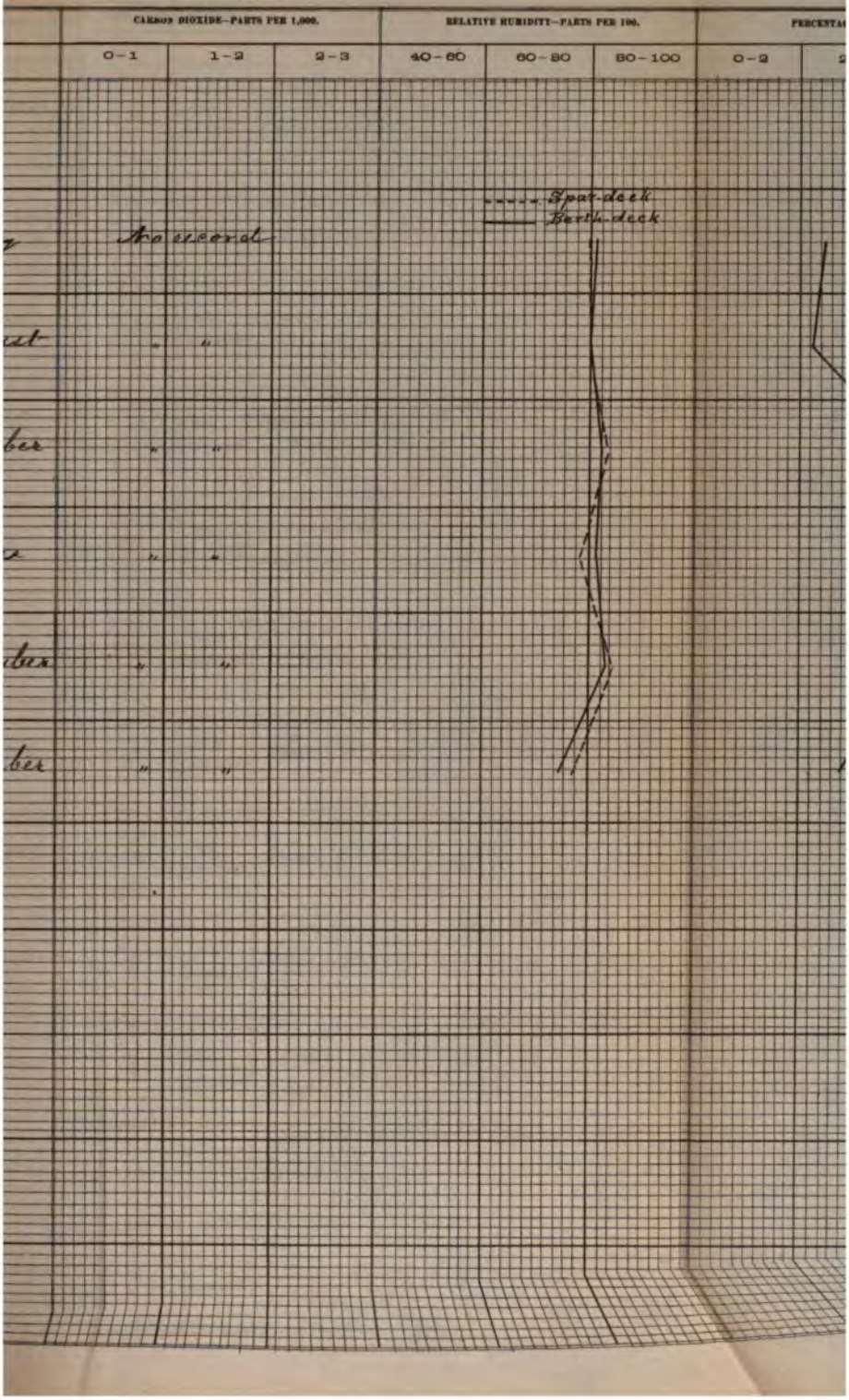
High relative humidity. Average for the year - Spar
Percent. of Sick - 3.14

U. S. S. Alaska



Average Berth-deck humid. 72.; Sparrel
Sick list rapidly increases as ship goes fr

U. S. S. Lackawanna



PACIFIC STATION.

During the year 1879 this squadron was composed of the following vessels: Pensacola, 2d rate (flag-ship); Alaska, 2d rate; Lackawanna, 2d rate; Tuscarora, 3d rate; Adams, 3d rate; Alert, 3d rate; Jamestown, 3d rate; Independence, 3d rate; Onward, 4th rate; and Hassler, 4th rate, the latter attached to the Coast Survey. The Independence and Onward are receiving-ships, the former stationed at Mare Island, Cal., and the latter at Callao, Peru.

The entire force was 1,688, and corrected for time, 1,502.

		Per M.
The total number of admissions, including those remaining from the antecedent year, amounted to	1,785	=1121.10
Discharged cured	1,593	=1060.58
Invalided	128	= 85.21
Died	10	= 6.65
Continued	54	= 35.28

The total loss of service from disease was 17.826 days.

The daily average number of sick (absolute) was 48.19.

The daily average number of sick per M was 32.08.

The average number of days under treatment was 9.08.

The number admitted per M of strength was 1184.4.

The greatest daily average loss of service was on the Alert, viz, 38.4 per M, and the least on the Hassler, 5.66 per M. The longest average duration of treatment was on board the Onward, 15.76 days; and the least on the Tuscarora, 5.43 days.

The average daily loss of service from the various classes of disease was as follows:

Zymotic	4.79
Constitutional	12.66
Diseases of the nervous system	3.97
Diseases of the eye	0.72
Diseases of the ear	0.12
Diseases of the teeth	0.02
Diseases of the circulatory system	0.17
Diseases of the absorbent system	0.27
Diseases of the respiratory system	3.80
Diseases of the digestive system	4.17
Diseases of the genito-urinary system	3.83
Diseases of the locomotive system	0.24
Diseases of the integumentary system	0.18
Injuries	7.32
Poisons	0.40
Non-malignant tumors	0.25

Of the 128 cases invalided there were from—

Zymotic diseases	11
Constitutional diseases	29
Diseases of the nervous system	25
Diseases of the eye	3
Diseases of the ear	2
Diseases of the teeth	1

Diseases of the circulatory system	1
Diseases of the absorbent system	3
Diseases of the respiratory system	23
Diseases of the digestive system	12
Diseases of the genito-urinary system	6
Diseases of the locomotive system	1
Diseases from violence and deaths	1

Twenty of these cases were from the Pensacola, 31 from the Alaska, 10 from the Lackawanna, 18 from the Tuscarora, 20 from the Adams, 4 from the Alert, 8 from the Jamestown, 2 from the Onward, 14 from the Independence, and 1 from the Hassler.

Of the 10 deaths 2 were from intermittent fever, 1 from adenitis, 1 from dysentery, 1 from fracture, 1 from typhus fever, 1 from hypertrophy of the heart, 2 from drowning, and 1 from chronic pneumonia phthisis. Two of the deaths occurred on the Pensacola, 2 on the Lackawanna, 1 on the Tuscarora, 1 on the Adams, 2 on the Jamestown, 1 on the Independence, and 1 on the Hassler.

The zymotic group of diseases numbered 279 cases, or 185.7 per M, viz: epidemic catarrh 17, dengue 2, erysipelas 2, simple continued fever 17, typhoid fever 3, intermittent fever 198, relapsing fever 2, remittent fever 7, typhus fever 1, measles 9, vaccina 18, and variola 3. The order of frequency of these diseases in the squadron was as follows: first, on board the Tuscarora 51.2 per M; next, the Pensacola 42.6 per M, Lackawanna 29.3 per M, Independence 16.6 per M, Adams 13.6 per M, Alaska 13.3 per M, Jamestown 8.6 per M.

The number invalided from these causes was 11, or 7.3 per M, and 3 died or 1.99 per M.

Epidemic catarrh.—All of these cases happened on the Tuscarora while lying at Mare Island during the month of September, and seemed to be an expression of a prevailing catarrhal influence widely spread in that section of country.

Dengue.—This disease is unfrequent in the Navy; the two cases occurred on the Pensacola while lying at Acapulco.

Simple continued fever.—Of these cases 10 occurred on the Alaska, 4 on the Pensacola, and 1 each on the Lackawanna, Onward, and Independence. They were the result of exposure to inclement and inequable weather.

Typhoid fever.—All of these cases occurred in the Tuscarora. The medical journal of that ship has the following remark: "It is to be noted that since August 18 the ship has been lying alongside the pier. On shore, abreast of the forward part of the ship, and distant only a few feet to windward, is a row of privies, which are used daily more or less. Moreover, owing to the tide, the mud over which the privies are placed is left bare several hours daily. The space beneath these privies is uninclosed, so that exhalations escape in all directions."

Intermittent fever.—Of this disease the Pensacola supplied the largest number, 54; the Tuscarora had 52 cases, the Lackawanna 43, the Adams 15, the Jamestown 11, Alaska 8, and the other ships a smaller number. One case died on the Pensacola, and 1 on the Tuscarora. Assistant Surgeon Crawford, on the latter ship, makes a note in the journal to the following effect: "There has been an epidemic of fever at this place (La Paz) for the past two months, which has visited the whole coast of Mexico as far south as Mazatlan."

Morbilli.—Five of the nine cases occurred on board the Alaska, and the remaining 4 on the Tuscarora. In the latter ship it was brought on board by men returning from liberty at Mare Island.

Vaccina.—Of the cases of vaccination, 18 required to be relieved from duty.

Variola.—One case occurred on the Alaska, and two on the Onward at Callao, where the disease existed sporadically.

Constitutional diseases.—Of this group there were 280 admissions, or 186.4 per M, viz: adynamia 23, diabetes 1, diabetes insipidus 1, podagra 1, acute rheumatism 55, torticollis 1, primary syphilis 77, consecutive syphilis 52. The largest proportion of these diseases occurred on the Pensacola, 47.9 per M; next on the Alaska, 28.9 per M; then on the Jamestown 20.6 per M, Lackawanna 24.4 per M, Adams 21.9 per M, Tuscarora 17.9 per M, Onward 8.6 per M, Independence 5.9 per M. There were 29 or 19.3 per M invalided, and 15 continued.

Adynamia.—Most of these cases were the result of malarial influences and prolonged service on the Pacific Coast. This affection prevailed mostly on the Pensacola and Jamestown, and there were 5 of the cases invalided.

Carcinoma.—There was one case of this malignant tumor, which occurred on the Pensacola, and resulted in death.

Diabetes.—Of the two cases of this disease, one occurred on the Independence, which was invalided, and the other on the Adams.

Rheumatism.—There were reported 68 cases of the acute form of this affection, and 55 of the chronic. Of the former nearly one-half (30) of the cases occurred on the Pensacola; the Alaska had 13, the Lackawanna 9, and the Tuscarora 8, while few cases occurred on the other ships. The greatest sufferer from the chronic was the Alaska, which had 17 cases; and the Jamestown follows with 9. The others had a comparatively small amount. The service of the Alaska and Jamestown at Sitka will account for the predominance of this affection on board.

Syphilis.—An aggregate of 180 cases was returned—77 of the primary disease or 51.77 per M, and 53 of the consecutive form, or 35.23 per M. The consequent loss of service was 2,690 days, or nearly twice the total strength of the squadron, and the average length of treatment in each case was about 20 days. The distribution of primary syphilis among the ships was as follows: Pensacola, 25 cases; Jamestown, 20; Adams, 11; Lackawanna, 7; Onward, 6; Tuscarora, 4; while the Alaska, Independence, Alert, and Hassler report but 1 each. The Lackawanna and Tuscarora were the greatest sufferers from consecutive syphilis, each reporting 12 cases; on the Pensacola there were 6; on the Alaska 5, and smaller numbers on the other ships.

Local diseases.—In the first group under this head, viz, affections of the nervous system, there were treated 115 cases, which give a ratio of 77.23 per M. The average duration was about 12½ days, and the total loss of service 1,439 days. No deaths were reported, and there were invalided 25. The principal factors in this class were neuralgia, which contributed 44 cases; cephalalgia, 33; and epilepsy, 16. There were 5 cases of paralysis; 5 of dementia; 3 of mania; 2 of vertigo, and 1 each of cerebritis, irritation of the spinal cord, sunstroke, and melancholy.

The Pensacola and Alaska present the largest ratio, 26.66 per M and 25.26 per M, respectively, and the Alert the least, .66 per M. Ten of the 25 invalided were cases of epilepsy, this being one of the affections which a rigid inspection at enlistment is unable to exclude. The single case of sunstroke reported was that of an officer on board the Tuscarora, who was admitted September 20, after several hours' exposure on shore, while measuring a base line. He suffered severely for some days with depression and nervous symptoms and was finally invalided to the hospital at Mare Island.

Eye.—Of affections of this organ there were 21 cases, a ratio of 13.90 per M, viz: Conjunctivitis, 7; iritis, 3; ophthalmia, 3; retinitis, 3; hordeolum, 2; keratitis, 2; ulcer of the cornea, 1. The ratio on the Pensacola was 4.66 per M, and the Alaska 3.33 per M, while the Tuscarora, Jamestown, and Adams had each but one case. Two cases of iritis and all three of retinitis were invalided.

Ear.—The aural affections seem to have been limited to four ships, and of the aggregate of 9 cases, all of the cases of otitis occurred on the Alaska, both cases of otorrhœa on the Adams, and the Pensacola and Tuscarora had each one case of otalgia. Two men were invalided, one from the Alaska and one from the Adams.

Teeth.—Four cases only of odontalgia were reported, two from the Pensacola and one each from the Alaska and Tuscarora. One man was invalided from the latter ship for loss of teeth.

Circulatory system.—Fourteen cases of affections of this system were reported, a ratio of 9.31 per M, mostly limited to the Tuscarora. Seven cases of angina pectoris are reported from this ship, the subject of them, the boatswain, having suffered from repeated attacks. There were also three cases of palpitation on this vessel, and one each on the Lackawanna and Adams. A case of hypertrophy of the heart, which resulted in death, was reported from the Jamestown.

Absorbent system.—The only disease under this head was adenitis, of which there were 20 cases, giving a ratio of 13.33 per M and a loss of 182 days' service; 10 of these were on the Pensacola, 4 on the Alaska, 3 on the Independence, and 2 on the Jamestown. One was invalided from the Alaska and one from the Pensacola.

Respiratory system.—An aggregate of 178 cases was reported as with diseases of this system, presenting a ratio of 118.5 per M, and distributed as follows: catarrh and acute bronchitis, of each, 67 cases; chronic pneumonic phthisis, 20; pneumonia, 7; pleurisy and asthma, each 4; chronic bronchitis, 5; laryngitis, 2; hæmoptysis and acute pneumonic phthisis, each 1. Nearly 40 per cent. of these cases occurred on the Pensacola, which returned 24 cases of acute bronchitis and 31 of catarrh. Seventeen cases of the latter affection were reported from the Jamestown and 8 from the Alert. Of the 20 cases of phthisis pneumonica chronica, 5 were on the Alaska, 3 on the Alert, and 3 on the Lackawanna. One death from this affection was reported from the Independence. There were 23 invalided, principally for chronic phthisis.

Digestive system.—There were reported 244 cases of diseases of this system, giving a ratio of 167.4 per M, and a loss of 1,524 days' service, the average length of the cases having been 6¼ days. As is usually the case on board ship, the prevailing affections were diarrhœa and colic, as a result of errors in diet, 94 cases of the former and 33 of the latter being reported. Of affections of the liver, there were 3 cases each of inflammation and congestion of that organ, and 8 of jaundice. The largest ratio in this class was on board the Pensacola, 50.59 per M, and the smallest on the Onward, 1.33 per M.

Genito-urinary system.—Of the diseases coming under this head there were 90 cases, a ratio of 59.92 per M., with a loss of service amounting to 1,408 days. The prevailing disease of this class was gonorrhœa, of which there were 42 cases, or nearly 50 per cent. Of orchitis there were 22 cases, and of urethral stricture 13 cases. The largest ratio of diseases of this class occurred on the Pensacola, 21 cases, or 12.33 per M.; next, the Lackawanna, with 17 cases = 10.33 per M. The Onward reported no cases, and the Alert but one; two cases of urethral stricture were invalided, and one of gonorrhœa. The largest number of cases of

he latter affection occurred on the Hassler, the vessel having the smallest omplement of men, a fact without doubt due to her being so constantly i port, with an unrestricted liberty list. The loss of service on the various hips from this disease was 600 days.

Locomotive system.—There were but 7 cases of diseases affecting this ystem, viz, 3 cases of periostitis, which occurred on board the Independence, and 4 of synovitis, 3 of which were on board the Alaska and 1 n the Pensacola.

Integumentary system.—Of the 153 cases reported (101.84 per M), the rgest number, 47, or 31.28 per M., were on the Pensacola; 29, or 19.3 er M, were on the Alaska; and 23, or 15.31 per M, on the Tuscarora. oils formed more than half the total, there having been 84 cases; 29 cases f abscess and 19 of ulcer make up the principal part of the remainder. n this class none were invalided.

Non-malignant tumors.—There were but two cases reported, 1 of fibroma n the Lackawanna, and 1 of sebaceous cyst on the Pensacola.

Violent diseases and deaths.—This group contributes a larger number f cases than any other, viz, 318, with a ratio of 211.71 per M, and enailing a loss of 2,674 days' service. Eighty-seven contusions were reorted, or 57.93 per M; 56 sprains, and 52 contused wounds, with smaller umbers of other injuries. The Pensacola reports the largest ratio, 54.39 er M, from 82 cases, and the Alaska had a nearly equal number, 77. he Hassler reports 4 cases, and the Alert 5. The smallest factor of ie list was dislocation, of which there were but 2 cases. There were 3 eaths—2 from drowning and 1 from fracture; 12, or 7.98 per M, were nvalided, 6 for hernia, 3 for fracture, and 1 each for contusion, incised nd punctured wounds.

Poisons.—Forty-five cases of inebriety and one of alcoholism make up ie total of this class. The ratio was 30.6 per M, and the loss of service 48 days. The Lackawanna and Tuscarora yielded the largest number f cases, 12 each.

TABLE 1.—*Showing the force of each ship, the number admitted and discharged, number of days under treatment, and average per 1,000 of force on the Pacific Station.*

Vessel.	Strength.	Strength corrected for time.	Admitted.						Discharged.				Continued.	Number of sick-days.	Average number of days under treatment.	Daily average number of sick.		Number admitted per 1,000 of strength.
			From last year.	First quarter.	Second quarter.	Third quarter.	Fourth quarter.	Total.	Cured.	Invalided.	Died.	Total.				Absolute.	Per 1,000 of strength.	
Pensacola, 2d rate; 2,000 tons; wood; screw; service, 365 days	380	380	8	115	133	133	107	496	458	20	2	480	16	5,324	10.73+	14.58	9.70	330.22
Alaska, 2d rate; 1,122 tons; wood; screw; service, 365 days	285	285	6	54	82	103	70	315	270	31	.....	301	14	3,564	11.31+	9.76	6.49	209.72
Lackawanna, 2d rate; 1,026 tons; wood; screw; service, 365 days	204	204	8	78	46	79	36	247	229	10	2	241	6	2,639	10.68+	7.23	4.81	166.44
Tuscarora, 3d rate; 726 tons; wood; screw; service, 365 days	167	167	5	90	59	44	34	232	209	18	1	228	4	1,260	0.43+	3.45	2.29	154.46
Adams, 3d rate; 615 tons; wood; screw; service, 365 days	172	172	7	35	51	19	23	135	111	20	1	132	3	1,712	12.68	4.69	3.12	89.88
Alert, 3d rate; 541 tons; iron; screw; service, 65 days	140	25	4	29	1	.....	.....	34	30	4	.....	34	.....	351	10.32+	0.96	0.63	22.63
Jamestown, 3d rate; 888 tons; wood; sails; service, 238 days	175	114	.....	.....	28	57	57	142	125	8	2	135	7	1,514	10.66+	4.14	2.75	94.54
Onward, 4th rate; 925 tons; wood; sails; service, 365 days	41	41	.....	11	9	10	4	34	31	2	.....	33	1	536	15.76+	1.46	0.97	22.63
Independence, 3d rate; 1,891 tons; wood; sails; service, 365 days	84	84	1	35	23	15	29	103	85	14	1	100	3	641	6.22	1.75	1.16	68.57
Hassler, Coast Survey, 4th rate; —— tons; service, 275 days	40	30	.....	.....	17	14	16	47	45	1	1	47	.....	285	6.00+	0.17	0.11	31.23
Aggregate	1,688	1,502	39	447	449	474	376	1,785	1,593	128	10	1,731	54	17,826	9.08	48.19	32.08	1,188.41

Diseases and injuries.	Cases.		Number of sick days.	Average number of men sick daily.		Average number of days under treatment.	Discharged to duty.		Invalided.		Died.		Remaining.
	Number.	Per M of force.		Absolute number.	Ratio per M of force.		Number.	Per M of force.	Number.	Per M of force.	Number.	Per M of force.	
GENERAL DISEASES.													
1.—*Zymotic diseases.*													
Catarrhus epidemicus	17	11.31	58	.15	.09	3.41	17	11.31					
Denguis	2	1.33	3			1.50	1	.66					1
Erysipelas	2	1.33	11	.03	.01	5.50	2	1.33					
Febris continua simplex	17	11.31	135	.37	.24	7.94	16	10.65					1
Febris enterica	3	1.99	15	.04	.02	5			3	1.99			
Febris intermittens	198	131.82	1,123	3.07	2.04	5.67	190	126.50	4	2.65	2	1.33	2
Febris recidiva	2	1.33	15	.04	.02	7.50	2	1.33					
Febris remittens	7	4.66	91	.24	.15	13	6	3.98	1	.66			
bris typhus	1	.66	5			5					1	.66	
orbilli	9	5.99	50	.13	.08	5.55	6	3.98	3	1.99			
ccina	18	11.97	99	.27	.17	5.5	18	11.97					
riola	3	1.99	110	.30	.20	36.66	3	1.99					
Aggregate	279	185.75	1,715	4.79	3.14	6.14	261	173.70	11	7.32	3	1.99	4
2.—*Constitutional diseases.*													
Adynamia	23	15.31	283	.77	.51	12.30	18	11.97	5	3.32			
Carcinoma	1	.66	30	.08	.05	30					1	.66	
Diabetes	1	.66	1			1			1	.66			
Diabetes insipidus	1	.66	26	.07	.04	26	1	.66					
Podagra	1	.66	11	.03	.01	11	1	.66					
Rheumatismus acutus	68	45.27	796	2.17	1.44	11.70	62	41.29	2	1.33			4
Rheumatismus chronicus	55	36.61	782	2.14	1.42	14.21	47	31.26	5	3.32			3
Torticollis	1	.66	2			2	1	.66					
Syphilis primitiva	77	51.27	1,595	4.37	2.90	20.71	71	47.29	2	1.33			4
Syphilis consecutiva	53	35.28	1,095	3.00	1.99	20.86	35	23.29	14	9.31			4
Aggregate	281	85.75	4,621	12.66	8.42	16.44	236	157.12	29	19.33	1	.66	15

TABLE II.—*Showing the number of cases, the discharged, the invalided, and the dead for each disease, &c.*—Continued.

Diseases and injuries.	Cases.		Number of sick days.	Average number of men sick daily.		Average number of days under treatment.	Discharged to duty.		Invalided.		Died.		Remaining.
	Number.	Per M of force.		Absolute number.	Ratio per M of force.		Number.	Per M of force.	Number.	Per M of force.	Number.	Per M of force.	
LOCAL DISEASES.													
1.—*Nervous system.*													
Cephalalgia	39	25.95	184	.50	.33	4.71	38	25.29					1
Cerebritis	1	.66	18	.05	.03	18	1	.66					
Dementia	5	3.32	199	.54	.35	39.80			4	2.65			1
Epilepsia	16	10.65	329	.90	.59	20.56	6	3.98	10	6.66			
Insolatio	1	.66	2			2	1	.66					
Irritatio spinalis	1	.66	8			8	1	.66					
Mania	3	1.99	96	.26	.17	32			3	1.99			
Melancholia	1	.66	55	.15	.09	55			1	.66			
Nausea marina	1	.66	1			1	1	.66					
Neuralgia	44	29.27	409	1.12	.73	9.29	38	25.29	3	1.99			3
Paralysis	4	2.65	138	.37	.24	3.45	2	1.33	2	1.33			
Pleurodynia	1	.66	3			3	1	.66					
Vertigo	2	1.33	10	.02	.01	5	2	1.33					
Aggregate	119	79.2	1,452	39.7	2.64	12.20	91	60.58	23	15.31			5
2.—*Diseases of the eye.*													
Conjunctivitis	7	4.66	58	.15	.09	8.28	7	4.66					
Hordeolum	2	1.33	3			1.5	2	1.33					
Iritis	3	1.99	103	.28	.18	34.33			2	1.33			1
Keratitis	2	1.33	2			1	2	1.33					
Ophthalmia	3	1.99	35	.09	.05	11.66	3	1.99					
Retinitis	3	1.99	18	.04	.02	6			3	1.99			
Ulcus corneæ	1	.66	44	.12	.07	44							1
Aggregate	21	13.98	263	.72	.47	12.61	14	9.32	5	3.32			2
3.—*Diseases of the ear.*													
Otalgia	2	1.33	4			2	2	1.33					
Otitis	5	3.32	38	.10	.06	7.60	4	2.65	1	.66			
Otorrhœa	2	1.33	2			1	1	.66	1	.66			
Aggregate	9	5.99	44	.12	.07	4.77	7	4.66	2	1.32			

Aggregate	5	3.32	14	.04	.02	2.80	4	2.65	1	.66			
5.—*Diseases of the circulatory system.*													
Angina pectoris	7	4.66	44	.12	.07	6.28	6	3.98	1	.66			
Hypertrophia cordis	1	.66	25	.07	.04	25					1	.66	
Palpitatio	5	3.32	30	.08	.05	6	5	3.32					
Pericarditis													
Syncope	1	.66	1			1	1	.66					
Aggregate	14	9.31	100	.27	.17	7.14	12	7.98	1	.66	1	.66	
6.—*Diseases of the absorbent system.*													
Adenitis	18	12.64	152	.42	.27	7.7	13	8.66	2	1.33			3
7.—*Diseases of the respiratory system.*													
Asthma	4	2.65	30	.08	.05	7.5	2	1.33	2	1.33			
Bronchitis acuta	67	44.61	771	2.11	1.40	11.50	63	41.95	4	2.65			
Bronchitis chronica	5	3.32	63	.17	.11	12.60	4	2.65	1	.66			
Catarrhus	67	44.61	337	.92	.61	5.02	66	43.95					1
Hæmoptysis	1	.66	9	.02	.01	9	1	.66					
Laryngitis	2	1.33	4			2	2	1.33					
Phthisis pneumonica acuta	1	.66	21	.05	.03	21			1	.66			
Phthisis pneumonica chronica	20	13.31	759	2.08	1.31	37.95	4	2.65	14	9.32	1	.66	1
Pneumonia	7	4.66	63	.17	.11	9	6	3.98	1	.66			
Pleuritis	4	2.65	29	.08	.05	7.25	3	1.99					1
Aggregate	178	118.50	2,086	5.71	3.80	11.71	151	100.53	23	15.31	1	.66	3
8.—*Diseases of the digestive system.*													
Cholera morbus	4	2.65	33	.09	.05	8.25	4	2.65					
Colica	33	21.97	108	.29	.19	3.27	33	21.97					
Congestio hepatis	3	1.99	10	.02	.01	3.33	2	1.33	1	.66			
Constipatio	8	5.32	20	.05	.03	2.50	8	5.32					
Diarrhœa acuta	93	61.92	338	.92	.61	3.63	93	61.92					
Diarrhœa chronica	1	.66	55	.15	.09	.55			1	.66			
Dysenteria acuta	12	7.90	132	.39	.24	11	11	7.33			1	.66	
Dysenteria chronica	1	.66	96	.26	.17	96			1	.66			
Dyspepsia	19	12.64	123	.61	.40	6.47	18	11.97	1	.66			
Enteritis	1	.66	9	.02	.01	9	1	.66					
Fistula in ano	2	1.33	22	.06	.03	11	1	.66	1	.66			
Gastritis	4	2.65	43	.11	.07	10.75	2	1.33	2	1.33			
Hæmorrhois	12	7.99	102	.28	.18	8.5	12	7.99					
Hepatitis acuta	3	1.99	76	.20	.13	25.33	2	1.33					1
Hepatitis chronica	1	.66	3			3			1	.66			
Icterus	8	5.32	135	.37	.24	1.67	6	3.98	2	1.33			
Peritonitis	1	.66	30	.08	.05	30	1	.66					

TABLE II.—*Showing the number of cases, the discharged, the invalided, and the dead for each disease, &c.*—Continued.

Diseases and injuries.	Cases.		Number of sick days.	Average number of men sick daily.		Average number of days under treatment.	Discharged to duty.		Invalided.		Died.		Remaining.
	Number.	Per M of force.		Absolute number.	Ratio per M of force.		Number.	Per M of force.	Number.	Per M of force.	Number.	Per M of force.	
8.—Diseases of the digestive system—Continued.													
Pharyngitis	20	13.33	86	.86	.23	4.30	18	11.97	1	.66	.....	.....	1
Tonsillitis	17	11.31	100	.27	.17	5.88	16	10.65	1	.66	.....	.....	.....
Vermes	1	.66	3	.....	.....	3	1	.66	.....	.....	.....	.....	.....
Aggregate	244	162.44	1,524	4.17	2.77	6.24	229	152.45	12	7.99	1	.66	2
9.—Diseases of the genito-urinary system.													
Albuminuria	1	.66	8	.02	.01	8	.....	.....	1	.66	.....	.....	.....
Balanitis	2	1.33	37	.10	.06	18.50	1	.66	.....	.....	.....	.....	1
Cystitis	2	1.33	151	.41	.27	75.50	.....	.....	.....	.....	.....	.....	2
Epididymitis	1	.66	7	.01	.....	7	1	.66	.....	.....	.....	.....	.....
Fistula vesicæ	1	.66	81	.22	.14	81	1	.66	.....	.....	.....	.....	.....
Gonorrhœa	42	27.94	601	1.64	1.09	14.30	41	27.28	1	.66	.....	.....	.....
Orchitis	22	14.66	295	.80	.53	13.40	21	13.99	.....	.....	.....	.....	1
Paraphymosis	3	1.99	25	.06	.03	8.33	3	1.99	.....	.....	.....	.....	.....
Phymosis	3	1.99	65	.17	.11	21.66	3	1.99	.....	.....	.....	.....	.....
Urethræ strictura	13	8.66	138	.37	.24	10.61	9	5.99	4	2.65	.....	.....	.....
Aggregate	90	59.92	1,408	3.83	2.55	15.64	80	53.26	6	3.98	.....	.....	4
10.—Diseases of the locomotive system.													
Periostitis	3	1.99	50	.13	.08	16.66	2	1.33	1	.66	.....	.....	.....
Synovitis	4	2.65	40	.11	.07	10	4	2.65	.....	.....	.....	.....	.....
Aggregate	7	4.66	90	.24	.15	12.85	6	3.98	1	.66	.....	.....	.....
11.—Diseases of the integumentary system.													
Abscessus	29	19.33	189	.51	.33	6.50	29	19.33	.....	.....	.....	.....	.....
Acne	3	1.99	98	.26	.17	32.66	3	1.99	.....	.....	.....	.....	.....
Ecthyma	1	.66	5	.....	.....	5	1	.66	.....	.....	.....	.....	1

Aggregate	153	101.84	1,441	3.94	2.62	9.41	151	100.53					2
POISONS.													
Alcoholismus	45	29.93	144	.89	.25	3.2	43	28.60					2
Ebriositas	1	.66	4	.01		4	1	.66					
Aggregate	46	30.62	148	.40	.25	3.21	44	29.29					2
NON-MALIGNANT TUMORS.													
Cystis sebacea	1	.66	4	.01		4	1	.66					
Fibroma	1	.66	90	.24	.14	90	1	.66					
Aggregate	2	1.33	94	.25	.16	7	2	1.33					
VIOLENT DISEASES AND DEATHS.													
Abrasio	15	9.99	135	.37	.24	9	15	9.99					
Ambustio	9	5.99	110	.30	.19	12.22	9	5.99					
Contusio	87	57.93	493	1.35	.90	5.66	84	35.94	1	.66			2
Fractura	14	9.32	352	.96	.63	25.14	8	5.32	3	1.99	1	.66	2
Hernia	10	6.66	89	.21	.13	8.9	4	2.65	6	3.98			
Luxatio	2	1.33	9	.02	.01	4.5	1	.66					1
Strenuma	56	37.27	502	1.37	.37	8.96	55	36.61					1
Submersio	2	1.33	2			1					2	1.33	
Vulnus contusum	52	34.62	547	1.77	1.11	10.51	50	33.29					2
Vulnus incisum	30	19.99	193	.53	.35	6.43	28	18.67	1	.66			1
Vulnus laceratum	21	13.99	180	.49	.32	8.57	20	13.33					1
Vulnus punctum	20	13.33	62	.17	.11	3.1	17	11.31	1				2
Aggregate	318	211.71	2,674	3.32	2.20	8.40	291	193.74	12	7.99	3	6.99	12
Grand aggregate	1,785	1,188.41	17,826	4.88	3.34	9.98	1,593	1,061.25	128	85.21	10	6.65	54

TABLE III.—*Showing the number of cases, the invalided, and dead, for each disease on each ship on the Pacific station.*

Diseases and injuries.	Pensacola.			Alaska.			Lackawanna.			Tuscarora.			Adams.			Alert.			Jamestown.			Onward.			Independence.			Hassler.		
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
GENERAL DISEASES.																														
1. *Zymotic diseases.*																														
Catarrhus epidemicus										17																				
Denguis	1																													
Erysipelas				1															1											
Febris continua simplex	4			10			1															1			1					
Febris enterica										3	3																			
Febris intermittens	54		1	8			43	2		52		1	15	2		4			11			4			7					
Febris recidiva										2																				
Febris remittens	3	1											4																	
Febris typhus																			1		1									
Morbilli				3						4	3																			
Vaccina				1																					17					
Variola	1																					2								
Aggregate	64	1	1	25			44	2		78	6	1	19	2		4			13		1	7			25					
Ratio per M	42.6	.66	.66	13.3			29.33	1.33		51.26	3.99	.66	13.65	1.33		2.66			8.67		.66	4.66			16.66					
2. *Constitutional diseases.*																														
Adynamia	5	1		3			3			2			3	1		1			5	2					1	1				
Carcinoma	1		1																											
Diabetes																									1	1				
Diabetes insipidus													1																	
Podagra							1																							
Rheumatismus acutus	30			13	2		9			3			8			1						3			1					
Rheumatismus chronicus	6	1		17	2		4			5	1		6						9	1		4			1			3		
Torticollis										1																				
Syphilis primitiva	25			1			7			4			11	2		1			20			6			1			1		
Syphilis consecutiva	6	1		5	3		12	1		12	3		4			3	2		7	1					4	3				
Aggregate	73	3	1	39	7		36	1		27	4		33	3		6	2		41	4		13			9	5		4		
Ratio per M	48.6	1.99	.66	28.92	4.96		24.4	.66		17.97	2.66		21.97	1.99		3.99	1.33		26.66	2.66		8.65			5.99	3.33		2.66		

LOCAL DISEASES.																																			
1. *Nervous system.*																																			
Cephalalgia	9			16						11										1						2									
Cerebritis																										1									
Dementia				3	2		2	2																											
Epilepsia	5	2		4	3		2	1															2	1		3	3								
Insolatio				1																															
Irritatio spinalis				1																															
Mania	1	1		1	1															1	1													
Melancholia																	1	1																	
Nausea marina				1																															
Neuralgia	23	1		9	1		1			5			3	1												1			2						
Paralysis				2	1																					2	1								
Pleurodynia										1																									
Vertigo	2																																		
Aggregate	40	4		38	8		5	3		17			3	1		1	1		2	1		2	1		9	4		2						
Ratio per M	26.66	2.66		35.26	5.33		3.33	1.99		11.31			1.99	.66		.66	.66		1.33	.66		1.33	.66		5.99	2.66		1.33						
2. *Diseases of the eye.*																																			
Conjunctivitis	1						4			1			1																						
Hordeolum	2																																		
Iritis	1			1	1	1																				1	1								
[illegible]atitis				2																															
[illegible]halmia	2																			1															
Ria				2	2								1	1																					
[illegible]corneæ	1																																		
Aggregate	7			5	3		4			1			2	1					1						1	1									
Ratio per M	4.66			3.33	1.99		2.66			.66			1.33	.66					.66						.66	.66									
3. *Diseases of the ear.*																																			
Otalgia	1									1																									
Otitis				5	1																														
Otorrhœa													2	1																					
Aggregate	1			5	1					1			2	1																					
Ratio per M	1.66			3.33	.66					.66			1.33	.66																					
4. *Diseases of the teeth.*																																			
Odontalgia	2			1						1																									
Loss of teeth										1	1																								
Aggregate	2			1						2	1																								
Ratio per M	1.33			.66						1.33	.66																								

TABLE III.—*Showing the number of cases, the invalided, and dead, &c.*—Continued.

Diseases and injuries.	Pensacola.			Alaska.			Lackawanna.			Tuscarora.			Adams.			Alert.			Jamestown.			Onward.			Independence.			Hassler.		
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
LOCAL DISEASES—Continued.																														
5. Diseases of the circulatory system.																														
Angina pectoris										7	1																			
Hypertrophia cordis										3			1						1		1									
Palpitatio							1																							
Pericarditis																														
Syncope										1																				
Aggregate							1			11	1		1						1		1									
Ratio per M							.66			7.33	.66		.66						.66		.66									
6. Diseases of the absorbent system.																														
Adenitis	9	1		4	1					1									2						3					
Aggregate	9	1		4	1					1									2						3					
Ratio per M	5.99	.66		2.66	.66					.66									1.33						1.99					
7. Diseases of the respiratory system.																														
Asthma	1	1					2						1						2			1			1	1		14		
Bronchitis acuta	24	2		18	2		2			2			2	1		8			17						6					
Bronchitis chronica	2															1														
Catarrhus	31			3			2												1											
Hæmoptysis																														
Laryngitis	1																								1					
Phthisis pneumonica acuta							1	1																						
Phthisis pneumonica chronica	2	2		5	5		3	1		2	2		3	2					2	2		1			1		1	1		
Pneumonia	1			2			1						1			1									1	1				
Pleuritis				1			1												1						1					
Aggregate	62	5		29	7		12	2		4	2		7	3		10			22	2		2			10	2	1	15		
Ratio per M	4.33	.33		19.33	4.66		7.98	1.33		2.66	1.33		4.66	1.99		6.66			12.99	1.33		1.33			10.65	1.33	.66	9.98		

9. *Diseases of the digestive system.*																																		
Cholera morbus	2						1									1																		
Colica	12			2			3						3			1			10															
Congestio hepatis							1			2																								
Constipatio	3						1																						1			2		
Diarrhœa acuta	28			36			15			4			7									1							1			1		
Diarrhœa chronica													1	1																				
Dysenteria acuta							11		1				1																					
Dysenteria chronica	1	1								1																								
Dyspepsia	1	1		1			9						2									1							1			3		
Enteritis							1																											
Fistula in ano																																2	1	
Gastritis	3	1																	1	1														
Hæmorrhois	3			2			4			2			1																					
Hepatitis acuta				2																									1					
Hepatitis chronica				1	1																													
Pharyngitis	15	1		4			1												2															
Icterus				2			2	1					2	2																				
Peritonitis													1																					
Tonsillitis	8			4									2			1	1		1										1					
Vermes																													1					
Aggregate	26	4		54	1		51	1	1	10	1		20	2		3	1		14	1		2							6			8	1	
Ratio per M	50.59	2.66		35.95	.66		37.95	.66	.66	6.66	.66		13.31	1.33		1.99	.66		9.31	.66		1.33							3.99			5.33	.66	
9. *Diseases of the genito-urinary organs.*																																		
Albuminuria													1	1																				
Balanitis	1												1																					
Cystitis	1			1																														
Fistula vesicæ							1																											
Orchitis	5			2			5			6			4																					
Paraphymosis	1			1															1															
Phymosis	3																																	
Urethræ stricturæ	4	1		2	2		2			4	1		1																					
Gonorrhœa	6						9	1		2			3			1			9										2			10		
Epididymitis													1																					
Aggregate	21	1		6	2		17	1		12	1		11	1		1			10										2			10		
Ratio per M	12.33	.66		3.99	1.33		11.31	.66		7.98	.66		7.33	.66		.66			6.65										1.33			6.66		
10. *Diseases of the locomotive system.*																																		
Periostitis																													3	1				
Synovitis	1			3																														
Aggregate	1			3																									3	1				
Ratio per M	.66			1.99																									1.99	.66				

TABLE III.—*Showing the number of cases, the invalided, and dead, &c.*—Continued.

Diseases and injuries.	Pensacola.			Alaska.			Lackawanna.			Tuscarora.			Adams.			Alert.			Jamestown.			Onward.			Independence.			Hassler.		
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
GENERAL DISEASES—Continued.																														
11.—*Diseases of the integumentary system.*																														
Abscessus	1			7			1			2			4			1			10						2					
Acne													1															1		
Ecthyma																1												2		
Eczema				1									1																	
Erythema										1																				
Furunculus	34			13			16			12			7			1									1					
Herpes																									1					
Onychia																									1					
Paronychia	4			4						2																				
Unguis involutis										1																		1		
Ulcus	8			4						5						1									1					
Average	47			29			17			23			13			4			10						6			4		
Ratio per M	31.28			19.3			11.31			15.31			8.65			2.66			6.65						3.99			2.66		
POISONS.																														
Alcoholismus	9						12			12			1																	
Ebriositas	1																		2						9					
Average	10						12			12			1						2						9					
Ratio per M	6.65						7.98			7.98			.66						1.33						5.99					
TUMORS.																														
Cystis sebacea	1																													
Fibroma							1																							
Average	1						1																							
Ratio per M	.66						.66																							

| | | |

NAVAL HYGIENE.

PENSACOLA.

During the first quarter of 1879 the flagship Pensacola lay 16 days at Panama, 19 at Valparaiso, and 11 at Talcahuana, Punta Arenas, and Corinto; in all, 46 days in port and 44 at sea. In the second quarter, 54 days were spent at Callao, Peru, 15 at various small ports along the Pacific coast, and 22 at sea. In the third quarter, 41 days were spent at Callao, Peru, 14 at Coquimbo, Chili, 22 at small ports along the same coast, and 15 at sea. In the fourth quarter, 58 days were spent at Callao, Peru, 27 at Coquimbo, Chili, and 7 at sea. During the year this vessel lay in port 277 days, and was at sea 88 days.

Fleet Surgeon H. C. Nelson makes the following report of the occurrence of variola at Callao and its introduction on two of the vessels of the squadron, the Pensacola and Onward, lying at that port. He says:

It prevails to an equal degree in the city of Lima, which is 8¼ miles distant, and connected with Callao by two lines of railroad, trips being made, on an average, about every half hour. It is reported also at Ançon, a prominent summer bathing resort for the residents of Callao and Lima, which is located to the northward from here, and 30 miles from Lima by rail. Pisco, 150 miles south, is also affected by the disease. The newspapers from the south report it very prevalent in Santiago, the capital of Chili; and Valparaiso is said to be so badly infected as to make it very unsafe for persons liable to become a prey to this disease. On the arrival of this ship here, on the 24th of April last, sporadic cases of small-pox were said to exist; this is the case at all times in most of the cities of Central and South America. Their number increased gradually; but when the ship sailed for the south on the 14th June, there were no indications that the disease would become epidemic in its character. Previous to this time general liberty was granted the crew and officers, and men visited the shore without fear of contracting the disease. On the return of the ship from the south, on the 7th of July, I was not a little surprised to learn that, during our absence, the disease had assumed an epidemic form; and I recommended to the commanding officer that no general liberty be given the crew.

The crew of the United States storeship Onward, which vessel has been lying in this harbor for a number of years, remained free from the disease up to this time, although liberty has not been denied them. They number, all told, about forty souls; most of them have long service, and many of them have served several enlistments on board that vessel in this harbor, and have, in consequence, become so far acclimated as to resist the usual diseases to which strangers coming here are so liable to succumb. Vacancies in the complement of the vessel are usually filled by re-enlistments, and when this fails, men are enlisted from the shore. On the 16th of June a man was shipped for service in the ward room of the Onward, and on the 26th of the same month he complained of headache, nausea, and vomiting, with pains in the epigastrium, back, and loins. These were preceded by a chill, and attended with a high and continuous fever, and a full and frequent pulse. To allay the pains, nausea, and vomiting, which continued on Sunday morning, the 27th, a sinapism was applied to the epigastrium, and as it did not have the desired effect, it was ordered to be repeated on Sunday night. At sick-call on Monday morning the 28th, Passed Assistant Surgeon Black observed a copious eruption at the point which had been covered by the sinapism, and this aroused his suspicions as to the nature of the disease. At this time there was no eruption on any other portion of his body, although the integument covering the face was actively congested, as was also the conjunctiva. Early on Tuesday morning, the fourth day of the disease, his face presented unmistakably the eruption of "variola." He was at once sent ashore to the lazeretto attached to Guadalupe Hospital, where the government requires *all* persons with contagious diseases to be taken for quarantine and treatment. As this man had only been on board the Onward ten days when attacked, there can be no doubt that he had exposed himself to some source of infection previous to his enlistment on the 16th of June; for this reason I have hopes that the crew has escaped infection, but this can only be satisfactorily determined by a little time. There is nothing, so far, to indicate otherwise. As none of the crew of the Pensacola were permitted ashore, the danger of infection of the crew seemed very slight, although, as before stated, they were allowed the privilege of trading with the bum-boat men, who permitted alongside at meal hours. On Thursday morning, July 31, John West, do-

ing duty as berth-deck cook, presented himself at sick-call with a well-marked papular eruption, verging on the vesicular stage, located principally on the face and upper portion of the chest. Otherwise he said he felt perfectly well. When questioned, he stated that about a week (?) previous he began to experience uncomfortable sensations of chilliness, which was followed by a general indisposition and some fever. He gave himself no concern, as he did not consider his indisposition of sufficient importance to quit his work or apply to the surgeon for treatment. He said he first observed the eruption on Wednesday afternoon, and that it made its appearance suddenly; but even this gave him no particular concern until the next morning, when he reported himself for treatment. I recognized it at once as a well-marked case of varioloid, and he was immediately dispatched to the lazaretto. This man shipped in this port previous to the date of the ship sailing for the south on the 14th of June, and has not been ashore since his enlistment. The Pensacola sailed from Iquique on the 28th of June, direct for this place, and reached here on the morning of July 7. The first symptoms showed themselves in this man *about* Saturday, July 27, twenty-nine days out of Iquique, the last port visited before coming here, so there can be no doubt that he received the infection here in this harbor; but just exactly how is a matter for speculation. My opinion is that it was through some article purchased from the bum-boat man, and most likely the medium was the ragged and filthy fractional paper currency with which this country is so sadly afflicted at the present time. As a case had now occurred on board each of the vessels here (Pensacola and Onward) within a couple of days of each other, I felt considerable apprehension that the disease might become epidemic. Having this possibility in view, I deemed it prudent to make such preliminary arrangements on shore as were necessary for the accommodation of any additional cases, now liable to occur at any time. The propriety of organizing a temporary hospital ashore, as I had done previously under similar circumstances, first suggested itself to me as offering the best thing to do, as the sick would be under the care of the attendants and medical officers of this ship; but being most positively informed that the government authorities would not permit the carrying out of this proposition, even were it possible to obtain suitable accommodations, which was extremely doubtful, I determined to see what were the very best arrangements which could be made with the hospital authorities, and with this view visited that institution. It is under the immediate care of the Sisters of Charity, who seem to give the patient intrusted to their care the best of attention. As the lazaretto consisted of but one large ward, occupied by all small-pox patients in common, the prospects for obtaining separate quarters for our sick at first seemed unfavorable. Subsequently it was suggested that a ward opposite to and corresponding in size to the one now in use, but now filled with all manner of rubbish, might be cleaned out and arranged for any of our men who might be seized with the disease, where they would be under the supervision of the medical officers of this ship. In order to insure these accommodations, I addressed a communication to the authorities of the hospital, requesting, if consistent with their rules and regulations, that separate quarters be set apart for them; that a special attendant be detailed for their care; and that they may be furnished with the very best accommodations with regard to quarters, diet, wines, liquors, and medical attendance; in fact, everything which will promote their comfort and hasten their recovery.

Since the two men have been in hospital I have visited them daily. They have been placed in a special ward under the care of a careful nurse, and they assure me they have every attention and are well cared for. I am happy to say that on my visit to them to-day the indications pointed to a favorable termination in both cases.

During the month of June there were seventy admissions of persons with variola, and of this number thirty-eight proved fatal. I have not yet been able to learn the number of admissions and deaths for the month of July, but am assured that they are no less than for the month of June, and that there is no cessation of the disease, either in Lima or Callao. The government appears active in its efforts to check the disease, and with this view have districted the city and appointed a vaccine physician for each district; and though vaccination is not compulsory, there are very few who do not avail themselves of the opportunity to have it done.

From the very large number of persons one meets on the streets of Lima and Callao presenting the marks of small-pox, it is certain that this disease is not only general, but very virulent in its type. I think I do not exaggerate when I state that at least one-half of the native Peruvians, male and female, bear the evidence in their faces of having had the disease.

Ten days have now elapsed since the patient from the Onward was sent to the hospital, and eight since West left this ship. As yet no more cases developed themselves on either ship. In case there are I shall keep the bureau informed as to the progress of the disease.

ALASKA.

During the first quarter of 1879 the Alaska visited Panama, San Francisco, and various small ports on the Pacific coast, remaining at the

first-named port 21 days. She was in port during the quarter 52 and at sea 38 days. In the second quarter 54 days were spent at Sitka, 7 at San Francisco, 8 at various small ports on the coast, and 22 at sea. In the third quarter 41 days were spent at San Francisco and navy-yard, Mare Island, 14 at Panama, 10 at various small ports, and 27 at sea. In the fourth quarter 27 days were spent at Iquique, Peru, 20 at Callao, 27 at various small ports along the coast, and 18 at sea. During the year this vessel lay in port 260 days and was at sea 105 days.

Surgeon W. K. Van Reypen makes the following observations upon the sanitary condition of this ship:

At last report the Alaska was at Panama. The complement of the ship has been diminished by the discharge of the band, consisting of 13 men, and a reduction of 36 in the working force.

I would again earnestly recommend that a ventilating funnel be placed in the ward-room pantry. It is in the after end of the ward-room, and incapable of ventilation as at present arranged. It is the receptacle and abiding-place of confined air and unwholesome odors. The health of our former pantry-man was seriously impaired by his constant service there, and the present pantry-man, who was a strong and healthy man when he joined the Alaska in August last, is now recovering from a typhoid condition, resulting from his constant exposure to the influence of the impure and confined air of the pantry. The ventilation of the berth-deck is all that could be desired; that of the ward-room state-rooms could be much improved by the adoption of the method employed on the English corvette Turquoise. This consists in downward currents established by cowls opening on the inner side of the hammock rail on the quarter-deck, from which tubes communicate with registers opening under the state-room berths. About three inches from the deck upward currents are caused by the upper air in the rooms passing through registers in the upper part of the rooms through the side of the inner planking, communicating with tubes having latticed orifices opening in the outer air just below the hammock rail on the quarter-deck. The surgeon of the Turquoise informed me that this simple and inexpensive arrangement gave excellent ventilation.

In regard to lighting, heating, water, food, and clothing, I have no additions to make to my former report.

There have not been any epidemic diseases on board during the year. While at Callao small-pox was prevalent on shore, but the crew were not allowed liberty, and there were no cases occurring on board.

After leaving Panama, on the way to San Francisco, the vessel touched at various ports on the Central American and Mexican coast, merely for the purpose of communicating with officials and exchanging salutes. On arriving at San Francisco we prepared for sea immediately and went to Sitka, touching at Esquimault for coal. The Alaska arrived at Sitka April 3 and remained until April 12. The weather was exceedingly disagreeable; it either rained, snowed, or hailed every day of our stay. The health of the ship's company was injuriously affected by the comparatively sudden transfer from the tropics to the very cold and damp atmosphere of Sitka. Chest and bowel affections were numerous, and cases that should have been simple bronchitis rapidly assumed a congestive type with typhoidal symptoms. The residents of Sitka comprise Indians, Russians, and a few Americans. They are all very poor and suffer from the diseases of poverty and filth. It is the exception to find an adult not affected with secondary syphilis. They have neither hospital accommodations nor regular medical attendance.

On the return of the Alaska to the coast of South America the ports of Mexico and Central America were again hurriedly visited. During the latter part of the war between Chili and the allied forces of Peru and Bolivia, the ports of Iquique, Pisagua, Arica, and Mollendo were visited. At Iquique were the wounded from the battles of Pisagua and Agua Santa. They were about forty in number, and were cared for in an old dilapidated building, which had at one time been used as a civil hospital. Nothing could be learned from them. The severely wounded had died on the battle-field, where many of them had remained four days without attention. Those in the hospital were treated in a crude and simple fashion. At Arica there were one hundred and sixty in hospital, a portion of them in adobe houses, and others in tents somewhat resembling the hospital tents used by Union troops during the war of the rebellion. These tents were large enough to accommodate eight cots comfortably, but the Peruvians had crowded twelve into them. The patients were badly nourished and received inadequate attention. Their records were so carelessly kept that it was impossible to obtain from them any accurate statistics.

The ports visited have been generally healthy. At Callao an epidemic of small-pox was on the wane. All the officers, stewards, and other persons who visited the shore

were vaccinated. It was impossible to obtain a sufficient quantity of virus to vaccinate the ship's company. Commercial intercourse was continued between Callao and adjacent ports, notwithstanding the prevalence of the epidemic. Sporadic cases of small-pox occurred at Iquique during the fall, but the disease has materially increased since the occupation of the town by the Chilian forces, and it will probably soon be considered epidemic. If I can obtain trustworthy statistics of the disease I will forward them to the bureau.

LACKAWANNA.

During the first quarter of 1879 the Lackawanna lay 58 days at Panama, 12 days at various small ports on the coast between Panama and San Francisco, and 20 days at sea. In the second quarter 30 days were spent at Callao, Peru; 6 at Apia, Samoan Islands; 2 at small ports on Marquesas Islands, and 53 at sea. In the third quarter 77 days were spent at Apia, 3 at Pago Pago, and 12 at sea. In the fourth quarter 32 days were spent at Apia and Honolulu, and 60 days at sea. During the entire year this ship was in port 220 days and at sea 145 days.

There was no sanitary report for this ship for the year 1879.

TUSCARORA.

During the first quarter the Tuscarora visited Acapulco, Panama, Ayuca, Salinas Cruz, Chipena, Ventosa, San José de Guatemala, Chicarene, Petallan, Sihuantenejo, Isla Grande, and Guatulco, 59 days in port and 31 at sea. In the second quarter the ship visited Acapulco three times, remaining there, in all, 21 days; she was 1 day at San Francisco, and 69 days at sea. The third quarter was spent entirely at the navy-yard, Mare Island, California. In the fourth quarter Acapulco was the only port visited; 28 days in port and 64 at sea. During the year this vessel laid in port 201 days and was at sea 164 days. The following facts bearing upon the sanitary condition of the ship are extracted from the report of Surgeon George A. Bright:

During the past twelve months the Tuscarora has continued the work of surveying along the Pacific coast, from Cape Saint Lucas to San José de Guatemala.

At the date of my last report the ship was on her way to Panama, where astronomical observations were to be taken. We left that port 23d January, 1879, and proceeded north to the coast of Mexico, taking up the survey at Petallan and continuing it to Tartar Shoal.

June 3, 1879, we left Acapulco to run a line of soundings from Cape Corrientes to Cape Saint Lucas. The rainy season having set in at the above date, any further surveying was impracticable; accordingly, the ship left Pichelinque Bay on June 16 for San Francisco, where she arrived June 29. The succeeding three months were passed at the navy-yard, Mare Island, making repairs and preparations for further work. On October 4 the ship left again for the south, reaching Acapulco December 3, and has, since that time, gone as far as San José de Guatemala in her work. During the year 200 days have been passed in port and 165 days at sea. The only foreign ports visited have been Acapulco and Panama. Beside these a number of points have been stopped at along the coast, which are mere trading stations. The ports above named have already been reported on as to their sanitary aspects, etc. There has been no opportunity, therefore, for obtaining from foreign sources medical information such as should find a place in this report.

With respect to hygienic influences contained within the ship itself, I have to note scarcely any change during the year past. Those months spent on the coast of Mexico belong to the dry, healthy season. This is demanded by the nature of our work. The results of attempting to pursue the work during the rainy season are expressed in my report for 1878.

We have enjoyed almost uninterrupted fair weather; hence a large number of the crew have slept under the awnings on deck, and the evil effects of crowding between decks are considerably abated. I should say also that the ship's complement has been a trifle less this year than before; this reduction resulting from our having left at the navy-yard, in October, most of the ship's guns; hence a decrease in the number of the crew.

Some months ago the very defective ventilation of the after end of the wardroom

was amended by the introduction of two flues, each 9 inches in diameter, from the ceiling of the wardroom pantry to the poop-deck. These flues rise about 2 feet above the level of the poop and are surmounted by cowls which can be turned in any direction. Through these flues there is a constant feeble current of air upwards, depending on the fact that the air of the pantry, warmed by a lantern constantly burning there, has a temperature about 2 ° F. higher than that of the surrounding air; and, until recently, there has been no ready way for deteriorated air to escape. No other alterations in the ship demand notice here.

The disadvantages arising from the situation of the galley upon the berth-deck, those from the absence of a separate boiler for distilling fresh water for drinking, and those from foul and inaccessible bilges, were all insisted upon in my report for 1878—and they remain unchanged. I mention them now only for the purpose of saying that they are as troublesome now as before. The long-standing difficulty with the bilges is such that it should receive very special attention whenever this ship is again subjected to complete repairs, and radical changes should be made.

In my last report I neglected to speak of the brig of this ship, in which prisoners are occasionally placed. It well merits a description. It is a room on the port side of the berth-deck, about 5 feet abaft the fore hatch, and is about 6 feet long by 4 feet wide, with a cubic air space of about 146 feet. It is lighted by one dead-light nine inches in diameter, which is so near the water-line that it can rarely be opened at sea. The means of ventilation, however, are most noticeable. In the forward bulkhead of the brig a space 15 inches square is occupied by an iron plate, which is perforated by 306 holes one-half inch in diameter. In the door of the brig, similarly, there is another plate 15 inches by 19, perforated by 154 one-inch holes, but, lest the supply of fresh air should be rendered too liberal, this second perforated plate is closely covered by a blind which does not open and whose slats are immovable. Both the plates are about 4 feet from the floor at their lower edge. It should be borne in mind that on this ship there is no free passage of air fore and aft on the berth-deck, the space amidship belonging to the boilers and machinery being closely bulkheaded at each end. One would like to know what ideas the designer of this singular calaboose may have had upon the subjects of the necessity of fresh air and the mechanism of ventilation. The place is kept clean and frequently is whitewashed.

During the third quarter of 1879, while the ship lay at the navy-yard, Mare Island, there occurred a few cases of morbilli. Undoubtedly, the origin of these was in the exposure of some of the crew to contagion while on liberty ashore, as liberty was granted pretty generally. The cases were but four in number, of whom three were at once transferred to the naval hospital. The fourth case, that of a midshipman, appeared while the patient was on liberty and living at a hotel in San Francisco, and this gentleman did not return to the ship till convalescent. The opportunity for prompt removal from the ship, doubtless, prevented the further spread of the disease. These cases occurred in August last. A few weeks later, three cases of enteric fever appeared successively in a period of nine days. They also were transferred to hospital at once. Nothingwas ascertained as to the causation of this outbreak, and no other manifestations of epidemic disease have occurred.

In addition to the foregoing report, Passed Assisant Surgeon Aulick supplies the following information:

The ventilator of the wardroom has been improved somewhat by the addition of two circular copper tubes, 10 inches in diameter, running from the after part of the pantry, on either side, to the poop-deck just abaft the cabin skylight. On the top of each tube is fitted a movable cowl flared to 19 inches in diameter, and so arranged that it can be adjusted to any direction by means of thumb-screws.

It was the intention, I believe, when the ship was being repaired last summer, to open a small hatchway, leading from the pantry to the poop, as was done in the Quinnebaug and other vessels; but, for some reason or other, it was not carried out, and the above-mentioned tubes were introduced instead. Although these latter have proved to be very useful in carrying off a good part of the foul air which collects in the after part of the wardroom, still they are inadequate for the purpose for which they were designed.

With the above exceptions, there have been no changes worthy of note. It may be well to mention that, about three weeks after our arrival at Mare Island, several cases of typho-malarial fever made their appearance among the crew. Six in all were admitted to the list, and sent to the naval hospital at this place. They were all of a mild character.

When the Tuscarora arrived at Mare Island she was tied up to the coal wharf for about two weeks. Having to make way for another vessel, her position was changed to a point within a few yards of the opening of a sewer. To this cause, I think, can be ascribed the origin of the disease. When the discovery of the sewer was made the ship was removed as soon as possible to another locality, after which no other cases occurred.

ADAMS.

During the first quarter of 1879 the Adams visited the ports of Callao and Panama, remaining at the former 35 days and at the latter 45 days, and was at sea 10 days. In the second quarter 47 days were spent at Panama, 11 at Callao and Acapulco, and 33 at sea. In the third quarter 1 day was spent at Mazatlan, Mexico, 4 at La Paz, Lower California, and 14 days at sea, arriving on the 19th of July at Mare Island, California, where she remained till the expiration of the year. During the entire year this vessel lay in port 308 days and was at sea 57 days.

In regard to the sanitary condition of this ship the following extracts from the report of Passed Assistant Surgeon D. Dickinson will show certain improvements:

I assumed medical charge of the Adams at Panama, U. S. C., on the 14th February, 1879. The vessel remained in that port until May 11, when she went to Callao, Peru. After a stay of only seven days the Adams returned to Panama, and then proceeded up the Central American and Mexican coast to San Francisco, Cal., touching at Punta Arenas, La Union, Acapulco, Mazatlan, and La Paz. The stoppage at each of these places was so brief that no opportunity for sanitary investigation was afforded.

At San Francisco most of the officers and crew were detached, new ones detailed, and the ship put under extensive repairs. The crew were transferred to the United States receiving-ship Independence, and afterward to the hulk Monongahela, so that the Adams has practically been out of commission since the 12th August, 1879.

The complement of the ship has been reduced from 220 to 184 persons, consisting of 21 officers, 26 marines, 105 men, and 32 apprentices. The following table exhibits the nationality and age of the men and marines:

Country.	No.	Country.	No.
Australia	2	Japan	1
Austria	1	New Brunswick	2
Bavaria	1	Norway	2
China	9	Nova Scotia	2
Canada	2	Sandwich Islands	1
Denmark	2	Scotland	4
England	10	Sweden	2
Fayal	1	United States	55
Germany	7	Wales	2
Holland	2	West Indies	3
Ireland	20	Total	131

Age.	No.	Age.	No.	Age.	No.
15 to 20	7	30 to 35	32	45 to 50	2
20 to 25	40	35 to 40	18	50 to 55	1
25 to 30	24	40 to 45	5	55 to 60	2
				Total	131

Of the 32 apprentices all but four were born in the United States. The term of service of those now aboard will shortly expire. The reduction of the complement, mentioned at the beginning of this paragraph, allows more berthing space for the crew. Seventy men can sleep under the forecastle without great discomfort, and the ninety remaining for the berth-deck will have nearly 106 cubic feet of air space. The cubic air space for officers remains the same as stated in Past Assistant Surgeon C. K. Yancey's report for 1877. A large ventilator, 3 feet 3 inches by 2 feet 6 inches, has been extended from the after part of the wardroom through the cabin to the poop-deck. The pantry bulkhead has been removed, and an ample escape for the foul air of this formerly confined space has thus been provided. The pantry which used to occupy a great portion of the steerage country has been taken away, and the cabin storeroom on this deck converted into the steerage pantry. These changes greatly improve the ventilation of both wardroom and steerage without interfering materially with the sanitary surrounding or comfort of the captain.

The floor of the storerooms, which rested on the starboard bilge, rendering it im-

possible to clean the latter, has been raised, so that the entire bilge can be thoroughly inspected and cleansed in the future.

A revolving cowl is to be placed over the ventilator leading from the sick-bay to the forecastle, instead of the original fixed cover.

The Adams is now believed to be nearly as comfortable and healthy as it is possible to make a ship of her tonnage.

The health of the eighty apprentices who joined the ship at her original commission remained good throughout the entire cruise. Twenty apprentices were afterward added to supply vacancies caused by desertions. Among the whole number only three were invalided home, two with consumption of the lungs, and one with secondary syphilis. Only one death occurred, and that was caused by tetanus, arising from an accidental wound of the left knee. The apprentices made excellent seamen, and this system of recruiting our Navy seems to me worthy of the highest praise.

While at Panama we used water obtained from the island of Toboga, and is that furnished Pacific mail steamers and to our men-of-war for some time past; it is of good quality. Except when at this port distilled water was employed.

The maximum and minimum of barometer and thermometer for the time passed at Panama is hereby given.

Month.	Barometer.		Thermometer.	
	Max.	Min.	Max.	Min.
February	30.05	29.87	84	76
March	30.07	29.85	86	76
April	30.09	29.85	86	78
May	30.05	29.90	84	78

Our vesssel laid at anchor some five miles from the shore, and the men were allowed only special liberty. They were permitted tropical fruits freely. The general health of the crew remained good throughout our stay.

ALERT.

The Alert left Yokohama, Japan, for San Francisco January 3, and arrived at the latter port February 21. On the 6th of March the crew was transferred to the receiving ship, and the Alert lay at the Mare Island navy-yard during the remainder of the first quarter and all of the second quarter.

Forty-one days were passed in port and 49 at sea.

There was no report furnished for this ship.

JAMESTOWN.

The Jamestown was in the Pacific fleet 54 days of the second quarter, during which she lay in ports of San Francisco and Sitka 31 days, and was at sea 23 days. During the entire third and fourth quarters she lay at Sitka, making in all 215 days spent in port and 23 days at sea.

No report was furnished by the medical officers of this ship as to her sanitary condition.

INDEPENDENCE.

The Independence is a receiving ship at Mare Island, California, and was anchored off the navy-yard at that place the entire year 1879.

Passed Assistant Surgeon F. H. Terrill makes the following remarks relating to her sanitary condition, and concerning the surrounding locality:

She lies moored at the wharf on the eastern side of Mare Island. Surrounding the latter there is a belt of alluvial deposit varying in breadth; at the point where the ship lies it is about 200 feet broad, completely covered at high water and exposed at

low. It is formed by the mud brought down by the Napa Creek and the Sacramento River, the latter bringing the greatest quantity. In the case of the Sacramento River, much alluvial matter is thrown into it by hydraulic mining operations carried on in the interior. This paludal region, confined almost entirely to the eastern side of the island, is beset with a coarse reed (*Phragmites communis*). Numerous varieties of gulls, duck, and snipe abound, the latter feeding on the small crustaceans and worms found in the mud.

Climate.—A period extending from the latter part of November until the latter part of the following March constitutes what is generally known as the rainy season or winter. The remaining portion of the year is devoted almost entirely to an unclouded sky and strong winds from the west and northwest. During the winter season the winds are variable, less strong than during the summer, except during the gales, which are sometimes quite severe. A peculiarly drying wind usually prevails for a few days during the summer; it comes from the northward and eastward; is almost completely desiccated by its passage over a hot and dry tract of land (the San Joaquin Valley), and desiccates almost everything with which it comes in contact; the grass becomes dry and brown, the earth cracks, forming quite large crevasses. Its effect upon man is to produce an uncomfortable dryness of the mouth and nostrils, nothing more.

Mean annual barometric height 29.99 inches. Mean temperature 53°.86 F. during the year.

Hygiene of the ship.—The gun and berth decks are the only ones used in berthing the men.

Cubic capacity of gun-deck	3,075 cubic feet.
Cubic capacity of berth-deck	2,478.02 feet.
Average number of men on gun-deck	68.
Average number of men on berth-deck	24.
Number of cubic feet per man, gun-deck	45.22
Number of cubic feet per man, berth-deck	103.255

Both gun and berth decks are lighted by means of large square ports, and large hatchways; despite all of which, the average amount of carbon dioxide in the air of the berth-deck is .0010, and in the gun-deck .0008, which, below that of an ordinary sea-going ship, is more than is consistent with good ventilation.

The *sick-bay*, which is forward on the berth-deck, is large, well lighted and ventilated. Here we manage to keep the carbon dioxide down to .0006, and the relative humidity at about 64.

The *water-closets* are forward, on each side of gun deck; they became leaky, and some of the foul ooze came through the deck into the sick-bay; although producing no disease, I called attention to the fact and it has been remedied.

ONWARD.

The Onward is used as a storeship for the Pacific fleet, and lay at anchor in the harbor of Callao, Peru, during the entire year 1879.

The sanitary report for this ship is wanting.

HASSLER.

The Hassler is in the service of the United States Coast Survey, and on duty along the coast of California during the second, third, and fourth quarters, 1879.

No sanitary report has been received from this vessel.

MEDICAL TOPOGRAPHY AND SANITARY REPORTS OF THE PACIFIC STATION.

MARE ISLAND.

REPORT OF SURGEON G. W. WOODS, MARE ISLAND, CAL.

Mare Island, the Pacific naval station, is located in latitude 38° 0′ 4′ N. and 122° 15′ W., about 25 miles from the city of San Francisco.

The name by which the station is designated is a translation of the Spanish "*Isla de la yegua*," which title was bestowed by General Mariano Guadaloupe de Vallejo, its former owner, from the circumstance of a favorite mare having formed a landing place here, on the occasion of an accident to a ferry-boat laden with horses, which was capsized in Carquinez Straits. The island was originally a grant to Senor Castro, who sold it to John B. Frisbie and Bezar Simmons for $7,000, who in turn disposed of it to W. H. Aspinwall, E. W. P. Bissell, and Mrs. Mary McArthur, in 1851, for $17,000, from whom the government derived its title, January 4, 1853, on the payment of $83,000.

In the following year, September 16, 1854, the interval being occupied in the preparation of a sectional dock, which was sent out from the Eastern States, Commander David G. Farragut was ordered to Mare Island, and on the 3d of October the national flag was hoisted by him as its first commandant.

Commander Farragut, with his officers, lived for some time on board the storeship Warren, while the various shops and houses necessary to a naval station were in process of construction. The first building erected was a small cottage which, until within a few years, was occupied as the commandant's office, but is now replaced by a more pretentious structure. This pioneer building forms an appendage of the hospital, and is devoted to the purposes of a pest-house.

Since 1854 appropriations for Mare Island have been liberally bestowed, and it is now furnished with all necessary shops and mechanical appliances, a sectional dock, excellent and commodious barracks for the marines, a large hospital for the sick of the Pacific and Asiatic squadrons, while charming homes have been provided for the majority of the officers attached to the station.

The island comprises an extent of rolling land two and three-quarters miles in length by an average width of five-eighths of a mile, and a long stretch of tale lands extending eleven miles in a northerly direction to Sonoma Creek.

The island proper embraces about 930 acres, and is bounded to the westward by San Pablo Bay, an extension of San Francisco Bay; to the eastward is separated from the town of Vallejo by Mare Island Straits, and terminates at its southern extremity in Carquinez Straits, the outlet of the Sacramento and San Joaquin Rivers.

The geological character of the island resembles in its principal features that of the main land. The soil, about 2½ feet in depth, is principally a black loam, known in California as adobe, though here and there streaks of good brick clay and alluvial soil are encountered. The rock formation is stratified alluvial sandstone, resting at various angles, the prevailing pitch being about 45°, and forming bold bluffs at the western shore.

Some cretaceous deposits and numerous oyster-shells (not fossil) are

found at the commencement of the tule lands, and along the shore the remains of the *Elephas giganteus* have been exhumed in the post pliocene formation. At the southeastern portion of the island are several mounds of muscle shells, combined with sand, in which the bodies of numerous Indians are interred, the victims of an extensive small-pox epidemic which decimated the tribe about the year 1839.

All the varieties of water-fowl known to the Pacific coast are found here in abundance, embracing the various edible ducks, including the canvass-back, the wild goose, snipe, curlew, and several species of sand-piper. Gulls and pelicans are also numerous, and in its vicinity the salmon and sturgeon fishery is extensively pursued.

The land birds embrace the lark, bluejay, blackbird, robin, swallow, thrush, linnet, hummingbird, several varieties of hawk, the ground owl, and the beautiful crested California quail (*Lophortyx Californica*). Raccoons are so numerous as to be excessively annoying to the raisers of fowl, and the coyote, or California wolf, often crosses the tale, to commit depredations in the poultry yards.

At the southern extremity of the island are some stunted evergreen oaks and buckeyes, the only trees indigenous to the locality. From their dwarf-like character, and the fact that they lean from the direction of the prevailing summer winds, the earlier commandants were led to think that the growing of large trees and shrubs was a useless experiment. It remained for Rear-Admiral James Alden, in 1869, to prove this conclusion erroneous, and to him we are indebted for the planting of thousands of trees, which in the brief period of ten years have grown into forests. If trees, however, were not planted in the earlier days of the yard, rose-bushes and other flowering plants were scattered in profusion through the private grounds, so that for many years Mare Island has been noted, even in this land of flowers, for its wonderful gardens, its display of choice roses during the spring and summer months not being exceeded elsewhere in the world. At this season, also, the acres of unoccupied land are covered with myriads of wild flowers, principally the blue nemophila, the yellow pansy, or violet, and the brilliant escholtzia, associated with a luxuriant growth of wild oats.

The poison oak (*Quercus Viri*) is also indigenous to Mare Island, and during the spring many cases of poisoning occur. When young, it is somewhat of a creeping plant with small red leaves resembling the oak, but when older it attains the height of 6 to 8 feet, appearing something like the dogwood of the Atlantic States, and bears a larger leaf resembling the maple. Its flower is very minute, and its fruit a small hard berry. The sanguineous and lymphatic are most susceptible to its influence, in whom it first produces an intense pruritus, followed by erysipelatous redness and œdema which affects the whole body, but especially the face, which becomes extremely swollen, and the eyes closed from puffiness of the lids. Those of a thin, spare habit may generally handle it with impunity, while with those whom it influences, it is not necessary that it should be touched, the volatile poison imparted to the atmosphere being sufficient to produce its worst effects.

The symptoms being allied to erysipelas, the treatment for that cutaneous affection has generally been pursued, viz: tincture of iron internally, lead and anodyne lotions, soothing ointments, &c. A decoction of the *Grindelia hirsutula* and *Robusta*, the common "tar weed" of California, is undoubtedly curative, used both internally and externally. Aqua ammonia gives great relief, as does water as hot as can be borne; but all remedies must yield to bromine diluted with glycerine (m xx—℥j)

as a local remedy. It is in fact a specific and was first brought to the notice of the profession by Passed Assistant Surgeon S. A. Brown, U. S. N.

The population of the island is embraced in the officers, their families, and servants, the officers and enlisted men of the marine barracks, the officers and crew of the receiving ship Independence, the naval hospital with its inmates, and a large colony of watchmen whose residence on the island is made necessary by its insular position.

January 1, 1880, the population was registered as follows, exclusive of the families of officers living in Vallejo:

Officers	42
Wives and relatives of officers	34
Children of officers	45
Servants of officers	39
Marines	102
Recruits on receiving ship	132
Patients at hospital	22
Employés at hospital	16
Watchmen and other employés	30
Wives of other employés	16
Children of other employés	35
Total	513

Mare Island has an admirable location for the purposes of a navy-yard, being removed from the coast, which gives greater security in time of war, and it has a sheltered water front of great extent, with, at present, at least ample depth of water. Within a short time, it must be acknowledged, the possible filling up of Mare Island Straits with mining *debris* from the Sacramento River, which is brought in with every flood tide, and is deposited around any obstruction along the shore, has caused much anxiety. Extensive dredging has been necessary during the year 1879, and the matter has become so alarming as to create grave apprehensions of a necessary abandonment of the station in a not very remote future, unless the present reckless manner of conducting the business of hydraulic mining should cease.

All the numerous workshops and storehouses are arranged in proximity to the water front, and here are the sectional dock, the receiving ship Independence, and the iron-clads Monadnock and Comanche. Here also the immense store dock is in process of construction, at an estimated cost of over $2,000,000.

On a central eminence is the large office building containing the commandant's offices, those of the captain of the yard, paymaster, constructor and civil engineer, as well as the court-room and lyceum. It is surrounded by ornamental grounds, and dominates on one side the workshops, and on the other the private quarters of officers.

The quarters provided for officers are among the finest to be found at any naval station, being large and commodious houses of brick, with gardens, orchards, and ornamental grounds, fronting on an extensive park. Many of the junior officers, however, are unprovided with quarters, and are compelled to reside in the neighboring town of Vallejo.

The watchmen and their families either occupy frame buildings belonging to the government, or cottages which they have been permitted to erect at their own expense, forming a small village at the northern extremity of the yard, which is also the location of the dispensary. At the southern extremity of the island is another village, where the gunner and watchmen connected with the care of the magazine have their residence.

The dispensary is located in a building formerly used as "sick quarters" before the present hospital was erected. Five small rooms are

levoted to the dispensary, office, and apothecary's quarters, the rest of he building being occupied by watchmen and their families. It is at uch a distance from the center of the yard as to be practically useless s an office, and the surgeon of the yard, with his large family practice nd constantly occurring accidents, is subjected from this cause to much nconvenience. The storeroom for medicines, &c., is in the second story f the building belonging to steam engineering, which is needed for heir own purposes, and ere long will probably be demanded. As the surgeon's office is a supplementary laboratory for distribution to the Pacific and Asiatic squadrons, with valuable stores constantly on hand, it seems very desirable that a building should be erected in a central location for the reception of medical stores, and, for obvious reasons, that it should embrace a dispensary, office, and apothecary's quarters.

The Naval Hospital, erected in 1869–'70, is a creditable structure of brick, 250 feet in length, comprising two stories, and a mansard roof. The officers' apartments, dispensary, reception-rooms, officers' dining-rooms, and kitchen, are placed in the center, while the wards are at either end. The dimensions of the wards are, length 68 feet, width 24 feet, height 16 feet, and they are furnished with 20 beds each; thus giving to each occupant a cubic air space of about 1,300 feet. They are lighted by long windows on three sides, giving an abundance of light and air, and open upon broad verandas, commanding a fine view of the ornamental grounds and adjacent country. Lavatories, bath-rooms, and water-closets are connected with each ward, and ample ventilation is secured by open grates, and ventilators opening into the air-space between the double walls.

To Medical Director John Mills Browne is due the credit of perfecting this admirable institution—he having superintended its construction—and also of laying out its grounds with all the taste of an accomplished landscape gardener. With an infinite variety of trees, flowering shrubs and plants, rockwork, ponds, and fountains, the place has been transformed into one of the most attractive spots on the Pacific coast. The present capacity of the hospital is 80 beds, but it might easily be extended to 120. Its medical staff now embraces one medical director, one surgeon, and two passed assistant surgeons.

The Marine Barracks is a two-story building of brick, capable of accommodating 500 enlisted men. It is 500 feet in length by 40 in width, and has large mess-rooms, and dormitories opening upon spacious verandas. Each apartment having the width of the building, with numerous windows on either side, the ventilation and light are all that could be desired. The dormitories are 24 feet in width, with a height of 13 feet, and vary in length from 48 to 75 feet, giving to each occupant about 800 cubic feet of air space.

The officers' quarters are at one extremity, and at the other are placed the kitchen, bakery, and dispensary. To the medical department are allotted an examining-room and office, a dispensary, and one ward with water-closet and bath room. One marine is detailed to act as nurse.

The prison is a structure of one story within the barracks inclosure, intended for the confinement of court-martial prisoners while serving out their sentences. It is built substantially of brick, and rests upon a solid cement foundation, but is, nevertheless, during the rainy season, somewhat damp. The cells, 16 in number, are placed on either side of a central corridor leading to the guard-room. Their dimensions are, length 8 feet, width 4 feet 9 inches, height 9 feet, and are properly ventilated by an external aperture 10 by 18 inches, and a circular opening of 6 inches in diameter in the wall of the corridor, as well as by a grat-

ing in the iron door of the cell. In cold weather the fires of the guard-room warm the building sufficiently.

The privies and urinals at the barracks are arranged in a wooden building with latticed sides placed in the rear of the quarters, at a distance of about eighty-four yards. They are commodious, and probably as comfortable as such structures can be made consistently with the carrying off of offensive odors. The urinals are long zinc-lined troughs. The privies are arranged in stalls, with zinc-covered ledges, opening into a cemented vault. Disinfectants are used freely at short intervals. The distance of this building from the quarters is a serious objection, much sickness having resulted from the necessary exposure in reaching it, especially at night and during inclement weather. A covered passage should connect it with the dormitories.

Most of the buildings are heated by means of grates, the mildness of the climate rendering any general system unnecessary—a method of heating which aids most efficiently in ventilating the wards of the hospital and barracks. An exception to this is the office building and commandant's house, heated by a system of steam-pipes.

Gas is manufactured from gasoline and distributed to all the buildings of the "yard" proper, including private quarters. At the barracks it has not yet been introduced, and at the hospital special works furnish gas distilled from fish oils, much superior to that obtained from gasoline.

For many years the only supply of water for domestic and fire purposes was cistern water, the drainage from the various buildings. This supply being inadequate, connection was made some years since by means of a submarine pipe with the Vallejo water-works, and a contract entered into with this company to furnish one million gallons per month. The Vallejo water is obtained by surface drainage into an artificial lake, and it occurred to Rear-Admiral John Rodgers, while commandant of the navy-yard in 1873–'77, that the conformation of Mare Island afforded an opportunity of constructing a similar lake, which would render the station independent of any foreign water supply.

Accordingly, surveys were made, a ravine among the hills selected to be closed by dams, appropriations asked for and granted, the work rapidly prosecuted to completion, and we now have a navy-yard reservoir, or "Lake Rodgers," with a capacity of 13,217,000 gallons. Great care was taken in its construction by Civil Engineer Calvin Brown. Every particle of vegetable matter and surface earth was first carefully removed before commencing the work. The material used was the best clay, put on in 6-inch layers, well watered, and rolled with a 6-ton roller. After the dam was built to its full height, it was "pitched" on the inside bank with good-sized stones, and a layer of sand 6 inches thick spread over the top and outside bank, thus preventing any action from the wash of the waves or the force of heavy rains.

The water is distributed over the island through iron pipes, and has a sufficient pressure to reach the highest buildings. Cistern water is still used for the domestic purposes of cooking and drinking, only that the reservoir supply may be economized, as it would be difficult to determine any difference between cistern water and that of the reservoir, both standing every test as regards potability.

The natural formation of the island, with its hills and valleys, the highest point being 284 feet above the level of the sea, renders the question of drainage a very simple one, the surface water forming its own channels, and running off rapidly.

The officers' premises are drained by two large brick sewers, one running in front of the dwellings, and the other making connection with

ide-water. The first has a fall of but 5 inches, and the second of 1 foot a 100 feet. Another serious mistake was made, when these buildings were constructed, in leveling a natural elevation and excavating deeply for the foundations. In consequence of these two grave errors, viz, the inadequate fall, and by excavation placing the basement level on a lower plane than the sewers, the cellars have been frequently overflowed during the heavy rains of winter, while they are always damp, and the floors rapidly decay. The sewers are entirely inadequate to relieve the numerous buildings with which they are connected, and flushing or pumping to clear the obstructed water-closets and house-drains is a constant necessity.

While no sickness has thus far been caused by this defective drainage of the private dwellings, and the accumulation within the sewers of excrementitious matter, it is certainly a subject demanding immediate attention, being a condition likely at any time to become a fruitful source of zymotic disease.

The hospital, standing on an eminence, is drained into the tales overflowed by tide-water; while the marine barracks, with its prison and privies, situated 20 feet above high-water mark and but a short distance from the shore, has ample drainage into San Pablo Bay. All sewerage is carried rapidly away by the strong tides and river currents.

The seasons in California divide themselves naturally into the wet and dry, though spring and summer, autumn and winter are sufficiently characteristic. The rains generally commence during the first ten days of October, and the middle of May sees the close of the rainy season, to be succeeded by six months of the dry season, during which period no rain falls save an occasional momentary shower during the summer months.

The general impression seems to prevail abroad that the rainy season of California is like that of the tropics—a sort of annual cataclysm—and that during its continuance there is a daily down-pouring from the heavens. Such is, however, far from being the case. During this period no more rain falls, save in exceptional years, than during six months of the year in any of the Eastern States. There may be a week of rain and then a long period of as perfect weather as can be experienced in any portion of the world. The character of the rain is heavy showers, and a larger amount falls during the night than the day.

At Mare Island the summer temperature is seldom excessive, 75° Fahr. representing the average midday temperature through the season, though there are some short periods, more frequently in June and September, when the thermometer has indicated 95° Fahr. The mean for 1879 was 56°.86 Fahr. The coldest weather is experienced between Christmas and the middle of January, when frosts may occur nightly, the indications being occasionally as low as 28° Fahr., between 12 midnight and 4 a. m., and rising to 45° in the middle of the day. Although ice forms and tender plants suffer, the hardier plants struggle through this period without injury, and some varieties of the rose continue to open their blossoms daily.

The most disagreeable portion of the year is during those days of summer when the trade winds blow from the westward, and northward and westward, often having the strength of a hurricane, bringing with them the ocean fogs to mingle with clouds of dust raised by their tremendous force. The temperature falls, fires are necessary, and it is a season fruitful in coryza and pulmonary troubles.

During the summer an occasional sirocco blows from the northward and eastward, which, sweeping over the interior hot plains, is so completely dehydrated that it deprives of moisture everything with which it comes in contact. All verdure shows its influence as though submitted to the action of fire, the woodwork of buildings and furniture becomes cracked and fissured, the covers of books become warped, and all persons complain of a suffocative feeling, while those affected with pulmonary troubles, especially the asthmatic, suffer intensely.

During the rainy season the prevailing wind veers from the southeast to southwest, the milder rains coming from the southward and westward, and the storms from the southeast. The easterly winds, sweeping over the snow-covered sierras, bring over extremes of cold during December and January.

Mare Island is certainly a most salubrious place of residence. No epidemics have ever occurred here, and though there is the usual percentage of sickness incident to a community of such size, the number of serious cases is singularly small. Measles, scarlet fever, and diphtheria are not unfrequent, but in no case has death resulted from these or other diseases peculiar to children during the last fifteen years. Coryza, neuralgia, and all nervous affections are peculiarly frequent during the prevalence of the summer winds, and at this period acute pulmonary troubles are more often encountered, while it is a season especially aggravating to all affected with chronic lesions of the respiratory tract. These winds, however, have their sanitary advantage, being thorough searchers and ventilators, ridding every nook and corner of house, field, inclosure, or ravine of all deleterious emanations.

Much has been said about the malarious influences of the tule lands which extend for many miles from the northern extremity of the island, and malarious affections occurring among the residents of the yard have been supposed to have their origin in local exposure. I think this opinion to be erroneous, having satisfied myself, during a long residence at this station, that in every case of intermittent fever or other disease supposed to have its origin in malarious poison which has come under my own observation the patient has been submitted to a previous exposure, or has been similarly affected before coming to this station.

Five deaths only have occurred on Mare Island during the year 1879, and those at the hospital from causes having their origin in other locations.

I append an aggregate "report of sick" for the year 1879, excluding those under treatment at the naval hospital and civil cases, much the larger in number, of which no record has been hitherto kept, an omission which will be rectified during the coming year.

REPORT OF MEDICAL INSPECTOR, H C. NELSON, FLEET SURGEON.

VALPARAISO, CHILI.

This city is built at the foot of an amphitheatrical chain of coast hills, upon a strip of land so narrow that a large portion of the new city is built upon the hillsides and within the ravines (*quebradas*). The streets are narrow and badly paved, and the population, which is estimated at about 120,000, is exceedingly crowded.

There is no stream of pure water accessible to the city, so that this great necessity is chiefly supplied from reservoirs filled during the rainy

season. The quantity of the supply is therefore very precarious; always so limited as to make it a sort of treasure to be husbanded with care, and at times, if indeed this is not the rule, the quality is so bad as to render it unfit for drinking purposes.

Though there exists an attempt at a system of sewerage, it is an open question whether or not the sewers are more pernicious than healthful. During the summer, or dry season, the scarcity of water renders the flushing of closets and sewers alike impossible; hence accumulations occur, giving origin to gases of putrefaction, which are freely emitted into dwellings, as well as the street. When the winter rains come a general washing out occurs; and if, as occasionally happens, the rains are very heavy and prolonged, the violent rush of water down the hillsides and *quebradas* tears open the sewers and fills the air with their noisome odors.

Adding to these insalubrious conditions, a laboring population dwelling in huts and living among filth, Valparaiso should be a city scourged with epidemics and presenting a death-rate equal to the most unfavored spots in the world; and yet, leaving out an occasional epidemic of small-pox, which is always very fatal on this coast, it is not so. From its latitude, 33° south, and position, at the sea-level, presumably it should possess an elevated temperature. Two circumstances, however, prevent this: the cold ocean-current of Humboldt, which sweeps up from the Antarctic seas and bathes the greater portion of the South Pacific Coast, and the fresh sea-breezes which blow regularly over the city.

To this latter agency may be attributed whatever healthfulness the city may possess, as, through its means, the noxious gases are blown away, and a plentiful supply of fresh air is furnished for disinfecting purposes.

So far as the central and main streets are concerned, they are kept in a tolerably clean condition, but through scarcity of water it is almost impossible to institute and enforce proper hygienic laws and regulations among the greater portion of the population, crowded as they are into a space between the sea and coast hills, averaging not more than a quarter of a mile in width. It is a very common practice with many of them to empty fecal matter into the streets, and the authorities seem either powerless, or are not disposed to prevent it. Until some way is offered to the population to dispose of this in a proper and effectual way by its removal from the city, this state of things must continue to exist, and Valparaiso, from a sanitary point of view, will remain a disgrace to civilization.

With all these disadvantages the common exanthemata, and epidemic diseases with the exception of small-pox and erysipelas, rarely prevail to any very great extent. Fevers of a malarial type are said never to originate there; typhoid fever is not common, though very fatal: typhus is unknown; and it said that a case of yellow fever or cholera has never been known in Chili. Lately diphtheria has been introduced into the country, and now prevails at Santiago, though the numbers attacked are few and the disease less malignant than in more temperate climates.

Small-pox is the great curse of the people, and when it prevails as an epidemic it produces great mortality among the population. At such times it is said that at least 50 per cent. of the cases die. The year 1879 has been a noted one in respect to the general epidemic of small-pox on this coast, extending throughout Chili, Bolivia, and Peru. Valparaiso, particularly, has been sorely afflicted; and the number of cases to the entire population, and the percentage of deaths to the number

of persons afflicted with the disease, is something most unusual in this advanced day of science and civilization.

The following from the Chilian Times, of November 15, 1879, will give one an idea of the condition of the city at that time:

The small-pox reigns here and the death-rate is extremely high. The death-rate for 1872 was 1 in 36, in 1873 it was 1 in 35; but at the present rate it is as 1 in 30. This is a truly alarming state of affairs; 42 deaths daily in a population of 130,000 inhabitants!

The rate of mortality is entirely owing to neglect of, and an ignorance of, natural laws. Chili is now governed by lawyers, but they have studied the laws of men and not of the Creator. The only measures that have been taken against small-pox is a little extra street-sweeping and the issue of a decree that persons suffering from that disease shall not be conveyed in public coaches.

One would suppose that vigorous measures would be taken to have all small-pox patients carried out of the city as soon as the disease shows itself. But on the contrary every street contains diseased persons, and, therefore, centers of infection.

What steps have been taken with regard to sewerage? None. Day by day, dozens of slop-carts offend the nose and spread disease. It is well known to all scientific men, who are, we are sorry to say, very rare in Chili, that the germs of many, perhaps of all, contagious diseases are contained in immense quantities in the fecal matter of persons suffering from them. Foul smells may promote an epidemic, but cannot produce it. But if the germs be present in any one of those slop-carts it then becomes a powerful distributor of disease and death.

A step more urgently required is the removal to the Lazarettoes of the hundreds of persons with the disease, now in the houses and huts on the hills, especially near the Baron.

The writer asks if there is any remedy for this, and answers the question by recommending the free use of the chloride of lime in the carts and centers of infection.

The present epidemic had its beginning in August, 1879. On the 17th of January the disease was reported as on the decline, "not more than from 14 to 20 deaths occurring daily." During the year 1879 the number of deaths from all causes was 8,508; in 1878 it was 5,112; increase in 1879, 3,269.

The following is a monthly statement of the deaths from small-pox alone during the last two years in the city of Valparaiso:

Months.	1878.	1879.	Months.	1878.	1879.
January	7	6	August	13	146
February	15	5	September	15	209
March	15	3	October	9	678
April	23	2	November	11	658
May	19	7	December	7	502
June	9	25			
July	8	44	Total	151	2,475

The total number of deaths from all causes during the same period was:

Months.	1878.	1879.	Months.	1878.	1879.
January	448	440	August	450	726
February	370	350	September	432	1,100
March	438	381	October	472	1,233
April	432	426	November	484	1,315
May	372	382	December	439	1,120
June	346	427			
July	429	499	Total	5,112	8,508

The average yearly number of persons attacked with small-pox in *London* appears to be 3,804 vaccinated, and 1,253 unvaccinated. Now,

taking the population at 4,000,000, and the proportion of the vaccinated at 97 per cent., we have 3,880,000 vaccinated and 120,000 unvaccinated persons in the metropolis. Hence, 1 in 1,020 of the former and 1 in 96 of the latter were attacked. Reducing these results to the same ratio, we find the attacks from variola per 100,000 of the population to be 98 vaccinated and 1,020 unvaccinated. Thus it is seen that unvaccinated persons are ten times more liable to the disease, while it has been demonstrated that when they are attacked they are nearly six times more likely to die.

In making these comparisons of deaths, it must be borne in mind that the population of London is 33 times greater than that of Valparaiso.

SANTIAGO.

Santiago, the capital of Chili, is situated in about 33° south and at a level of 1,787 feet above the sea-level. Unlike Valparaiso, its sea-port, with which it is connected by substantially-built railroad, it is built upon a broad and fertile plain, at the base and in full view of the great snow-summits of the Andes. It has ample space for its population, amounting to 220,000, and enjoys a bountiful supply of delightfully cold pure water, flowing directly from the adjoining mountains. The climate is a remarkably fine one; the thermometer's *greatest* range for the year being from 40° to 68° Fahr.

Under proper sanitary regulations, Santiago, from its fine climate, pure and abundant supply of water, and its equable temperature, would, no doubt, be one of the most healthy cities in South America, if not the whole world.

The drainage is effected by an innumerable net-work of little canals, called *acequias*, walled at the bottom and sides by brick, and through which flow streams of running water. These canals permeate the city in all directions, running under houses and through yards, and receive every conceivable variety of refuse belonging to so populous a city as this. The tops of these canals, however, being open in many, such putrefactive gases and living organisms as they might naturally contain have full access to the dwelling-houses.

The descent of these canals is naturally great, and were it not for this the consequences resulting from these open conduits of filth and putrefaction would be of a most serious character.

In the matter of dwelling-houses, the people of Santiago do not construct them upon any approved hygienic principles (and these remarks will apply equally well to the entire west coast of South America). They are built almost exclusively of adobe (sun-dried brick), without proper foundation, so that the walls of the lower story are almost sure to be damp, and even wet during some seasons. They are badly ventilated, as a rule, and being built in the form of a hollow square, with intervening court-yards, the sun seldom penetrates the living apartments. The rooms in the second story are generally better supplied with windows and doors, and, in the better class of houses, with broad verandas, and hence are not open to the same objections.

The poorer part of the population live in all kinds of miserable huts and holes conceivable, surrounded by filth and foul air, while not a few sleep out in the open air with their never absent *poncho* for their only covering. During the hot days of the summer months, and as soon as the sun is below the horizon, a current of cold air begins to descend from the adjacent mountains into the superheated valley below, causing so great a reduction of temperature that to be comfortable one is

obliged to sleep under blankets the year round. Hence the exposed peasants are subjected to the full effects of these daily and sudden alternations of temperature.

The terrible earthquake is a frequent phenomenon during the wet winter season, and as they generally happen during the night the whole population, rich and poor, housed and unhoused, are liable to frequent exposures to the inclemencies of the weather from their occurrence, for at the first evidence of an approaching earthquake there is a general rush for the streets, and frequently whole nights are thus spent, many with only night garments as a protection. These remarks pertain equally well to all the cities and districts of country on this coast subject to earthquakes, and, as might be expected, the effects produced by them upon the health of the people are of a very decided character; the diseases from which they most suffer are those naturally resulting from the influences mentioned.

Pneumonia is not only a frequent disease, but, from its asthenic character, a very fatal one, constantly heading the list of the ordinary mortality tables. This asthenic character pertains to all classes of disease, and is due evidently to a deranged innervation necessarily attending a long residence in a climate with nearly the same mean temperature throughout the year.

Violent shocks of earthquakes are frequent, and it is thought by many observers in this part of the world that the increase in the electrical disturbance of the atmosphere which has been observed to attend these phenomena excites a powerful influence on the etiology of the prevalent diseases of this country.

A description of the medical topography of Santiago and vicinity might be made to apply in a general sense to all the principal cities and towns of the Republic of Chili of any prominence.

Excepting the "Verrugas fever" of Peru and the "Chabalonga" or typhoid fever of Chili, the west coast of South America has few diseases peculiar to it.

Chabalonga (typhoid fever of Chili) is a peculiar fever of an infectious character, and is solely epidemic to Chili. It is a disease of *specific* origin. It is a common disease, its principal habitat being in the larger cities and towns, where at times it assumes an epidemic character, and it then attacks all classes alike, though in its epidemic form its chief ravages are chiefly among the indigent and vicious portions of the community. It seems to be produced by some special conditions of filth, and it might very properly be classed as a "filth disease." Defective sewerage exercises a most potent causative effect, but the prime factor is as little known as that which produces the malarial and true typhoid, and other diseases classed as miasmatic-contagious. It is unattended by any eruption, and is of a low type. The abdomen does not become tympanitic; there is no gurgling on pressure of the right iliac region, nor the delirium of abdominal typhus or enteric fever. The bowels require laxatives to keep them free. The pulse runs from 100 to 120, with a daily range of temperature of 101° (morning) to 104° (evening).

The most marked symptoms are great muscular weakness, inability to exercise, and rapid emaciation. The disease is self limited, with a course of about three weeks. No specific therapeutic agent has been discovered, and like many other diseases of like character, the most that can be done is to aid nature in sustaining the vital powers by proper food, careful nursing, and the best hygienic surroundings, until the disease exhausts itself, when convalescence is slowly established. The most

common of the sequelæ is the falling of the hair, which gives the disease its name.

In its worst forms it has been regarded by the physicians of Chili as identical with the true typhus of Ireland, but I am inclined to the opinion that it is a disease of locality only, like the verrugas fever of Peru.

Quinine, though useful, has no specific power to arrest it. Tonics and stimulants are indicated early in the disease, but the most important considerations bearing upon the successful treatment of the disease are those relating to diet and hygiene. Convalescence is often slow, and months elapse before being fully restored to health.

Influenza.—This has prevailed on the whole coast, at various times, in an epidemic form. It does not seem to depend for its spread upon lines of travel or human intercourse, but appears simultaneously in many remote and almost inaccessible localities. Its origin at particular seasons, in utter disregard of all conditions of health, without doubt connect it with certain meteorological conditions of the air, probably induced by magnetic influences of a terrestrial or solar character. It can be considered an infectious disease in the sense of its being epidemic or pandemic only.

Hooping cough, measles, and scarlet fever.—These diseases undoubtedly prevail at times in an epidemic form, throughout the length and breadth of this coast, but especially in the cities and larger towns.

These epidemics are infrequent and have no permanent abiding place, but depend upon a reimportation of the contagious principle. These visitations are generally short-lived, mild in type, and unattended by any important sequelæ. No particular line of treatment is pursued.

Erysipelas is a common and severe affection and is very fatal to puerperal women in the form of metro-peritonitis. At times it becomes epidemic and assumes the hemorrhagic and gangrenous form, which is attended by great mortality. Its greatest ravages are among those with an impoverished state of blood and depressed nervous energy.

Syphilis.—The ravages of this disease are frightful. Sexual intercourse among the lower classes is unrestricted, and prostitution unlicensed, thus permitting the disease to work its maximum of mischief. It prevails here in all its multitudinous forms, in which the field for their study seems unlimited.

Cholera and yellow fever.—It is claimed that no case of either of these diseases has ever occurred in Chili. I am not inclined to accept this statement *in toto*, though the fact must remain that, with the single exception of variola, none of the acute "infectious diseases" has had extensive prevalence; nor has it been persistent among the people, the epidemics depending on a fresh importation of the poison of the particular disease as its starting-point. So far as regards variola, as it prevails on this coast, it has almost become a disease *sui generis*.

Dengue prevailed in Peru as an epidemic in 1818, and again in 1852; in both cases it was the precursor of yellow fever. It is said to have extended as far south as the northern province of Chili, but it is denied that it was followed by the yellow fever in the last-named locality. The Chilian physicians claim that it was an exaggerated type of malarious fever.

Relapsing fever.—An epidemic of this peculiar disease visited Chili, and the whole coast to the northward, in the year 1854. Nothing of a similar nature has occurred since that time.

Typhus and typhoid fevers.—Unless it is admitted that the "Chabalonga fever" is of this nature, it may be asserted that no genuine unmixed case of either of these has ever been known in Chili.

Diphtheria and *cerebro-spinal meningitis.*—Of recent years both of these diseases have found a habitat on this coast, though, as yet, have not assumed an epidemic form in Chili.

Hay fever.—Quite an uncommon disease.

Mumps.—The same may be said of this affection.

Small-pox.—This is the most frequent of all the infectious and contagious diseases, and sporadic cases of it can at all times be found. In its epidemic form its ravages are truly frightful, with a mortality of as much as 60 per cent. Such an epidemic had its inception in the city of Santiago during the month of July, and in Valparaiso in August, of the present year (1879). The mortality from this disease alone has been as many as 678 (October) in the city of Valparaiso, which is said not to cover the entire number, as many were never officially reported. The epidemic continued to prevail there as late as April, 1880, at which time the number of deaths for that month were put down as 393, of which number 63 were from small pox. At that date the epidemic had ceased in Santiago and was fast declining in Valparaiso, where the death-rate (annual) was 48 per 1,000, at that time, which represents about the mean for the year.

Leprosy.—An occasional case of this affection is sometimes seen. It may be said to be a rare disease in Chili.

Consumption, and all diseases of the respiratory tract, furnish the greatest number of the mortality tables throughout this whole section of country west of the Andes. Next in frequency are the diseases of the organs concerned in digestion; and next in frequency those of the nervous system.

Rheumatic affections are quite common among the lower classes of the community.

Dysentery.—This disease prevails extensively during the summer and fall months, chiefly among children and the poorer classes, who indulge in and almost entirely live upon watermelons and other fruits. It is the principal cause of death in *infancy* and childhood. At certain seasons it prevails as an epidemic, at which time it is very fatal. Its only peculiarity is the early assumption of an asthenic character.

Diarrhœa.—A very common disease, but never very fatal unless complicated with other diseases. Children are its principal subjects.

Hydrophobia, it is said, has never been known to occur upon this whole coast in man; although, in the dog, it occurs at times.

Of *venomous reptiles*, but few are found on the west of the Andes, so that it is rarely the physician is called upon to treat a wound inflicted by them.

TALCAHUANA, CHILI.

This town contains a population of 3,000; is the seaport of Conception, with which it is connected by a railroad 10 miles in length. It is regularly laid out, with streets running at right angles with each other. The streets are well paved, with rubble-stone from the neighboring beach, of moderate width, and lined with sidewalks of an average width of about five feet. The houses are built, mostly, of stone and adobe, plastered on the outside and whitened with lime, presenting a neat and commodious inclosure in the center, which is generally tastefully ornamented by choice flowers.

Talcahuana is the chief seaport of Chili south of Valparaiso, and has a capacious harbor, where vessels may lie with safety all seasons of the year. It is connected with Valparaiso by steamers and by rail, and with the southern coast by steam.

The public building consists of a substantially built custom-house and governor's residence, cathedral, and other buildings of but little importance, architecturally.

It possesses an equable and most healthy climate. During the summer months, which are never oppressive, many well-to-do families from the interior visit Talcahuana for the purpose of enjoying its cool and exhilarating atmosphere, and sea-bathing.

There is but one physician in the place, Dr. Trumbull, an American, and one drug store; and no public establishment for the treatment of sick.

The principal diseases are dysentery, diarrhoea, phthisis (very common), and rheumatic affections. Malarial fevers are rarely seen in this locality, and it is said that paludal fevers never originate there. Epidemics are unknown. The diseases incident to childhood are rare and mild in type. As everywhere on this coast, small-pox is a common disease, of which the people seem to have but little fear, and therefore take few precautions to avoid it.

The water supply is abundant, of excellent quality, and easily obtained from streams, which make their way down the hillsides into the bay.

The general features of the country in the vicinity of Talcahuana are rolling, and the soil very productive. Provisions of all kinds are plentiful, and at reasonable prices. Delicious fruits are abundant in their proper season, and can be obtained at but little cost. The bay abounds in fish, and oysters and other shell-fish are found in close proximity. Beef, mutton, and poultry of all kinds are always attainable; also, plenty of milk, butter, and eggs. The production of grain in this section of Chili has been large and increasing yearly, and capacious store-houses for its stowage have of late years been built. This is shipped principally to Europe and Peru.

The Bio-bio River empties into the bay of Concepcion within two miles of the town of Talcahuana, and is the largest river in Chili. Although not navigable, by reason of sand-bars at its mouth, it discharges an immense volume of fresh water into the bay.

CONCEPCION.

This city is inland, seven miles from Talcahuana, on a nearly level plain bordering the south bank of the Bio-bio River. It has a population of 16,000, with wide and well-paved streets and narrow sidewalks, the latter a characteristic feature of all Spanish-American cities. The streets cross each other at right-angles, and are well lighted with gas.

The water supply is abundant and good, its source of supply being the Bio-bio River. Most of the streets have water-mains laid through them, and all the public buildings and squares, as well as the principal private ones, are supplied with running water. The sanitary condition of the city is very defective for want of a proper system of sewerage, but might be vastly and easily improved. The surface system of sewage prevails here. The privies are never cleaned so long as it is possible to use them without doing so. The consequence is, typhoid and other fevers of low type, and dysenteries, are frequent and severe.

The usual diseases of childhood are not so common as in the United States, nor are they so fatal in their tendencies. Diarrhea and dysentery are quite common, and cause the greatest percentage of deaths among the infant population. Much of this is owing, I think, to a deficient knowledge of the preparation and cooking of food, which seems

so very evident to the foreigner visiting the countries on this west coast of South America; and I am persuaded that this want of knowledge in the culinary art first originated from necessity, caused by the general scarcity of wood and water throughout the greater portion of the countries on the west of the Andes. There are distances of hundreds of miles where the only potable water which can be obtained is that supplied by the distillation of sea-water. Wood is about as scarce as water, so that to be liberal with either, a person would have to spend the greater portion of his income to keep himself properly supplied with these two necessary articles. This forced habit of economy has produced such an effect upon the masses on this coast that, even where wood and water are in abundance, they are never used in such quantities in the preparation and cooking of food, nor for the purposes of personal cleanliness, as is consistent with the most common rules of hygiene.

Defect in personal cleanliness is the rule with all classes of the natives of the western coast of South America, and their constant natural condition would seem to be, at all times, in opposition to all the laws applicable to personal and domestic sanitation.

Concepcion is a place of considerable wealth and the seat of important institutions of learning—law, medicine, theology—under the direction of the National University at Santiago, the capital of the Republic of Chili.

The charitable institutions are numerous and are under the control and direction of the "Beneficencia" Society. The public squares, which are not numerous, are handsomely laid out and ornamented with bronze and marble statuary, flowing fountains, choice flowers and rare plants. The "Alemeda" is of considerable extent, and is considered as one of the finest in the world.

The climate is delightfully mild and cool the greater portion of the year. The thermometer sometimes rises into the eighties, but is never known to go beyond. The changes of the weather and seasons are gradual, and sudden changes of temperature rarely occur.

The "rainy season" begins with May and generally ends with September, though rain may fall any time during the year. The winds are generally from the southward, but sometimes during the rainy season they blow strongly from the northward, with the force of a gale; the latter are not frequent.

The vicinity of Concepcion is as productive, probably, as any in Chili. The grape matures well, with an abundant production; and great quantities of native wines, some of most excellent quality, are produced farther to the southward.

There is no medical publication printed in Concepcion, nor any establishments of note for the care and treatment of sick persons. There are several foreign physicians, English and German, who seem to control all the better class of patients, and consequently are more prosperous. The same may be said of the drug and apothecary shops.

PANAMA, UNITED STATES OF COLOMBIA.

The time spent in this harbor extended from the 9th of January to the 25th of January, 1879. At this time the weather was particularly good, with only a few light showers.

The city contains a mixed population of about 11,000, with the negroes preponderating. It is situated on the northern shore of the bay of the same name, in latitude 8° 56′ north, longitude 79° 30′ west. It occupies a narrow tongue of land, which extends far out in shallow water

into the bay, and is the most important town in the State of Panama, and its capital. The anchorage is safe, though some distance off shore (about two miles). The landing cannot be made from a ship's boat when the sea is less than half tide on account of shoals, which extend out a great distance. Though an old town, and one of very considerable commercial importance a few years back, and even so at this time (it being the western terminus of the Panama Railroad, and the point of departure of two lines of steamships, one to the south and the other north), it possesses no public buildings of any note. The cathedral and a few old convents, which are fast passing into a state of decay, are the only buildings which would attract the eye of a stranger. It boasts of a college, but the course of instruction is imperfect and the number of students are few. The only public institution for the treatment of sick persons is the Foreign Hospital, under the care of a Catholic sisterhood. The beneficiaries of the hospital are mostly foreigners, though persons of all nationalities are permitted to enjoy equally its generous hospitality. It is supported by voluntary contributions and collections from its inmates who are able to pay for subsistence and treatment. Some of its patients are American sailors and others of the same nationality resident on this coast, where they have been employed in public works, mines, or in other ways, and whom the chances of life bring to Panama in times of sickness and necessity; none are turned away from its doors.

There is no medical society, nor a medical publication of any kind, in Panama. The Panama Star and Herald is quite a creditable newspaper, and is issued daily in Spanish and English. There is a weekly edition in English, for foreign distribution, containing a *résumé* of all important events occurring on the west coast of South America, and the Central American States.

On its sea front, Panama is protected by a massive stone fortification built by the Spaniards when they held possession of the Isthmus of Darien. At that time it was considered a most formidable work, surrounded on all sides by a moat. At the present time it is in an almost defenseless condition, and it would offer but little resistance to the heavy long-ranged rifle ordnance in use at the present day. Much of the sea-wall that once protected the city front has been undermined by the constant action of the surf, and has fallen into the sea. The moat has been filled up, and in the rear of the fort houses now occupy its site.

The ramparts of the fort are wide and well paved, and furnish the fashionable promenade for the inhabitants of Panama, where they can almost always enjoy a refreshing sea-breeze during the late hours of the afternoon and early evening.

During the entire year, all the fruits peculiar to the tropics are to be had in abundance and at reasonable rates. Provisions of all kinds are plentiful and generally of good quality. The bay abounds in fish of many varieties. On account of its being a free port, articles of all kinds can be purchased at more favorable rates than in any other port on the western coast south of San Francisco.

The situation of Panama, so near the center of the tropical zone, on the west coast of a narrow mountain ridge connecting Central and South America, is not such as offers all those hygienic conditions most conducive to a healthy state of its inhabitants. The average daily mean temperature for the year is very high, and with this the hygrometric condition of the atmosphere is great. Either one of these conditions, acting upon a community of persons for any considerable length of time, is certain, sooner or later, to produce injury to the human economy which

will end in disease. Acting jointly, they form the most powerful predisposing, as well as exciting, cause to disease that is known to the physician.

The year is divided into two seasons, the "rainy" and the "dry." The latter does not actually commence until December, and lasts until April, though the month of November is often pretty free from rains. During the "dry season" regular land and sea breezes blow. The former varies from north to north-northeast; the latter coming from the south-southwest. The sea-breeze sets in about 10.30 a. m., and gradually increases in force until 3.30 p. m., after which time it gradually subsides, so that at sundown it is generally quite calm.

In April and May the weather is changeable and squally, though it very rarely blows with much force. The northeast winds give way to calms and southerly and westerly breezes, which bring rain.

The "rainy season," with strong steady winds from the southwest, is fairly established in June, and continues through July, August, and September.

The month of October is damp, but there is a decided improvement in November, when the winds become steady again from the east and north to the northwest.

Diseases of the digestive and integumentary system are common, and malarial fevers, often of a most pernicious type, prevail throughout the entire year. The rainy season is the most unhealthy, especially at its end, when the weather is changing. New-comers are quite sure to be attacked by what is called "break bone fever," or "influenza," the acclimating fever of hot climates. Its duration is from a few days to two weeks, sometimes longer. The symptoms are those of ordinary fever attended with soreness of the muscles, frontal headache, pain in the back, joints, and *bones*—as the patient will often describe it—with occasionally evidences of acute catarrh. All these symptoms will often yield promptly to a mercurial purge and a large dose of quinine, and leave the patient in a weak condition for a few days, when convalescence sets in and progresses steadily until health is fully restored. Persons thus attacked seem to enjoy, for a certain time, immunity from disease, but sooner or later they succumb to malarial influences, which produce a remittent or continued fever, and known as "Panama fever," which may be pernicious or otherwise in its type. The proper treatment is quinine freely, and an occasional blue pill; but, above all, change of climate. Elephantiasis and leprosy exist to a limited degree only, especially the latter.

Typhoid fever, at times, is common, but the exanthematous fevers do not prevail to the same degree as in the temperate zone, small-pox excepted. Yellow fever has prevailed at times in an epidemic form. It is not endemic to this section of country, and has always been introduced through the shipping.

During our stay at Panama, general liberty was given the crew, the result of which soon made itself known by a material increase in the sick-list. The cause of this was the unusual number of cases of primary syphilis and gonorrhea, which reported themselves for treatment. The most aggravated cases were excused from duty and entered in the list of sick, while an equal number of milder cases were placed under surveillance and treatment, and allowed to continue on duty. Many of the worst cases were very obstinate and rebellious to treatment, and at this late day several men have not yet fully recovered from the primary sore.

The number of these primary cases passing into the consecutive form

re few in proportion to the whole number affected. Like the primary ses, they do not readily yield to treatment, although I can say that t a single case has been invalided from the vessel on account of dis- se contracted at Panama. From the number of the crew affected, I n of the opinion that venereal not only prevails extensively in Pan- ma, but that it is of a very virulent type.

The anchorage for men-of-war being, as it is, so far from shore, their ews are not so liable to be attacked by malarial disease, nor to the me extent as those living ashore, the miasm in its passage over water r so great a distance being rendered less potent for evil by its absorp- on in that fluid.

During the dry season, when the wind-sails are set and properly immed to the wind, all the sky-lights raised, the ports open on the rth and gun deck, and the awnings spread and hauled out taut to he ridge-rope, sufficient protection from the direct rays of the sun is af- rded those whose duties call them on the spar-deck, and the move- ent of the air is sufficient to maintain a good ventilation throughout ost of the ship. This is evident from the reduced number of the sick s shown by the sick-list. But this is not the case when the rainy ason sets in. Now, as stated previously, sudden and heavy rain- owers with hot sunshine alternate frequently during the day, which ecessitates the lowering of the wind-sails, housing of awnings, and ften the closing of the ports on both decks, especially to windward. nder these circumstances the ventilation is most imperfect. This is oon detected by the sense of smell, which is characterized as "stuffy."

The hygrometric condition of the air is such at this season as to re- uire frequent inspections of the clothing of men and officers, which hould be frequently aired and exposed to the sun to prevent its injury rom dampness and mildew. Frequent airing of the men's bedding, henever the weather is suitable, is necessary as a hygienic measure, nd can hardly be done too frequently. All unnecessary drills, exer- ises, as well as labor of all kinds which would expose the men to the irect rays of the sun, should be absolutely forbidden within the tropics. Whenever practicable, whether in or out of port, the awnings should be pread during the day and housed at night, in order that the crew may e provided with as much sleeping space as possible under cover. The ractice of permitting men to sleep on the spar-deck, without protection rom night dews, is injurious, and should not be allowed, when it is so asy to afford them sufficient protection by properly housed awnings. larine sentries on the spar-deck should be protected by suitable awn- gs placed over their posts. When other suitable punishment can be und, confinement ought not to be permitted. A strict observance of ragraph 42, page 40, and paragraphs 71, 72, and 73, pages 42 and , "Regulations for the Government of the Navy, 1876," is earnestly commended as a necessary measure for maintaining the health of the ew. Constantly surrounded by such an atmosphere, which is rendered ore noxious at night when the crew is forced below decks by frequent owers of rain or the dampness caused by them, they very soon exhibit their pallid countenances the ill effects of such a climate. They become ervated, and lose their appetite; become reduced in weight, complain lassitude, headache, wandering, sharp, shooting pains in their extremi- s, and other symptons of innervation. Such are generally the pro- omata of an attack of Panama fever, though often the attack is ush- ed in by decided rigors. Such cases need close watching, as they are ore likely to assume a pernicious type. An ordinary attack of this ver rarely proves fatal if the patient is treated with due care, and is

Thermometrical observations, harbor of Panama, January, 1879.

Day of the month.	Hours of observation.	Barometer.	Thermometer.	Relative humidity (saturation being = 100).	Daily mean of three observations.		
					Barometer.	Thermometer.	Relative humidity (saturation = 100).
1879.							
June 10	10 a. m.	30.02	86	78			
	4 p. m.	29.92	85	92	29.97	83.33	87.33
	10 p. m.	29.97	79	92			90.33
11	10 a. m.	30	87	79			
	4 p. m.	29.91	85	92	29.96	83.33	90.33
	10 p. m.	29.98	78	100			
12	10 a. m.	30	87	65			
	4 p. m.	29.92	84	85	29.97	83	80.66
	10 p. m.	30	78	92			
13	10 a. m.	30.01	85	85			
	4 p. m.	29.93	85	92	29.98	82.33	92.33
	10 p. m.	30.02	77	100			
14	10 a. m.	30.05	83	92			
	4 p. m.	29.96	85	92	30	82.66	94.66
	10 p. m.	29.98	77	100			
15	10 a. m.	30.02	86	85			
	4 p. m.	29.94	86	85	29.99	82.66	87.33
	10 p. m.	30	76	92			
16	10 a. m.	30	80	92			
	4 p. m.	29.93	85	92	29.98	81.33	92
	10 p. m.	30.01	79	92			
17	10 a. m.	30.04	83	92			
	4 p. m.	29.98	84	92	30	82.66	92
	10 p. m.	29.98	79	92			
18	10 a. m.	30.03	84	78			
	4 p. m.	29.93	87	85	29.99	83.33	87.66
	10 p. m.	29.98	79	100			
19	10 a. m.	30	84	92			
	4 p. m.	29.91	86	92	29.99	83	94.66
	10 p. m.	30.03	79	100			
20	10 a. m.	30.07	83	92			
	4 p. m.	29.94	85	92	30.02	82	94.66
	10 p. m.	30.06	78	100			
21	10 a. m.	30.07	83	92			
	4 p. m.	29.96	84	92	30	81.33	94.66
	10 p. m.	30	77	100			
22	10 a. m.	29.98	79	100			
	4 p. m.	29.88	85	92	29.93	80.33	94.66
	10 p. m.	29.96	78	92			
23	10 a. m.	29.97	87	79			
	4 p. m.	29.98	85	92	29.98	83	90.33
	10 p. m.	29.99	77	100			
24	10 a. m.	30	84	85			
	4 p. m.	29.90	86	92	29.96	82.66	92.33
	10 p. m.	29.99	78	100			
25	10 a. m.	30.03	84	85			
	4 p. m.	29.91	90	93	29.97	84.66	92
	10 p. m.	29.97	80	100			
	Average				29.67	82.6	91.10

PAYTA, PERU.

This town, situated in about 5° south, contains a population of 5,800 inhabitants. Its streets are very narrow and dirty; some are paved, and others not. Side-walks are generally absent, and where they exist they are only about 3 feet in width, not enough to permit two persons to pass without one of them stepping into the street, which is generally the more cleanly of the two. Its situation is on a gentle slope, at the base of high hills, which bound it on the southeast, along the shore of the bay. The surrounding hills are about 200 feet in height, composed principally of sand, and are barren of vegetation. The houses

are built of sun-dried brick, generally but a single story in height, and covered with rushes and cane, upon which is placed a layer of mud sufficiently thick to make the whole tight enough to protect the inmates from the burning rays of the sun; and, as it never rains in any quantity, this seems a sufficient protection from the very infrequent and light showers to which this section of Peru is occasionally subjected. These are not sufficient for the support of vegetable life, and for many miles along the coast, and extending considerable distance inland, it is a rare thing to see a single point of vegetation. The tops as well as the sides of the houses being plastered with mud, it is difficult, on entering the bay, to distinguish them from the high sand-hills which form the background to the town. The only buildings of prominence, and these are very inferior, are the custom-house, the club, and two or three churches. It boasts of a hotel which has, it is said, a considerable local reputation, but were I compelled to choose between a bed in it and the sand at the foot of the hills back of the town, I should be inclined to choose the latter, as preferable. The people seem to live surrounded by everything that the word filth represents; and yet it is said to be a place where the people enjoy good health and an average longevity of life. From my observations I am inclined to the belief that the health of Payta has been very much overrated. There is nothing in its situation or in the habits of the people that would warrant such a statement. The people certainly present a most unhealthy aspect, and there are abundant reasons for it.

Considering its situation, Payta has in many respects a remarkable climate. The thermometer rarely ascends beyond 85°, and the near approach to the coast, at this point, of the great Humboldt cold current, so modifies the temperature that it is at no time particularly oppressive. The afternoons and nights are always cool, owing to the trade winds, which blow continuously throughout the year. The atmosphere is so dry that a piece of paper left exposed for any time will become so crisp that it can be reduced to powder by rubbing between the fingers.

The supply of water for domestic use is at all times precarious, and it might be said that Payta possesses neither supplies of wood nor water, and vessels visiting it for the purpose of obtaining supplies can with difficulty obtain them, or other necessaries of life. The nearest source of water is eighteen miles distant, from which point it is transported to the city on the backs of donkeys, and sold at almost prohibitory prices. There is another supply about forty-two miles distant, and is brought by the way of the railway extending that distance into the interior. Wood is so scarce and coal so high that the erection of a distilling apparatus on the sea-shore, at Payta, for the purpose of furnishing water for the town, would be so unremunerative that no one would risk an investment of that kind.

As no statistics are kept in the cities and towns of this district, information from practicing physicians and other persons of intelligence is all that can be obtained for any data concerning the character of, and mortality from, diseases peculiar to this section of the coast of Peru.

All forms of malarial fevers are common to this section of country. Consumption is said to be rare, and is regarded as curable, when taken in time, by a change of residence to any of the neighboring mountain towns, at an elevation of from 6,000 to 10,000 feet above the sea level.

Diseases of the digestive organs are very prevalent, caused by poor and badly cooked food and impure water.

Small-pox is never absent, although the government is supposed to

provide means for vaccination, free to all; but the persons charged with this duty are either too indolent to perform it, or the parents and friends of children so indifferent that the majority of them go unprotected, and sooner or later become affected with the disease. Every few years it prevails in an epidemic form.

Yellow fever.—This disease, in a mild form, was epidemic here in 1856, and again in 1868. The latter year it proved very fatal to foreigners and persons from the interior. Sporadic cases are said to occur yearly.

Asiatic cholera and *diphtheria* are unknown, and *croup* is very rare. *Whooping-cough* is common and has been epidemic during the present year (1879). *Measles* prevail at times epidemically, but a case of *mumps* is rarely met with. I was unable to hear of a single case of *scarlet fever* occurring in the community.

Diseases of the skin are common, on account of a total want of cleanliness of the person. *Tape-worm* occurs in the adult, while the ordinary *round worm* affects the children.

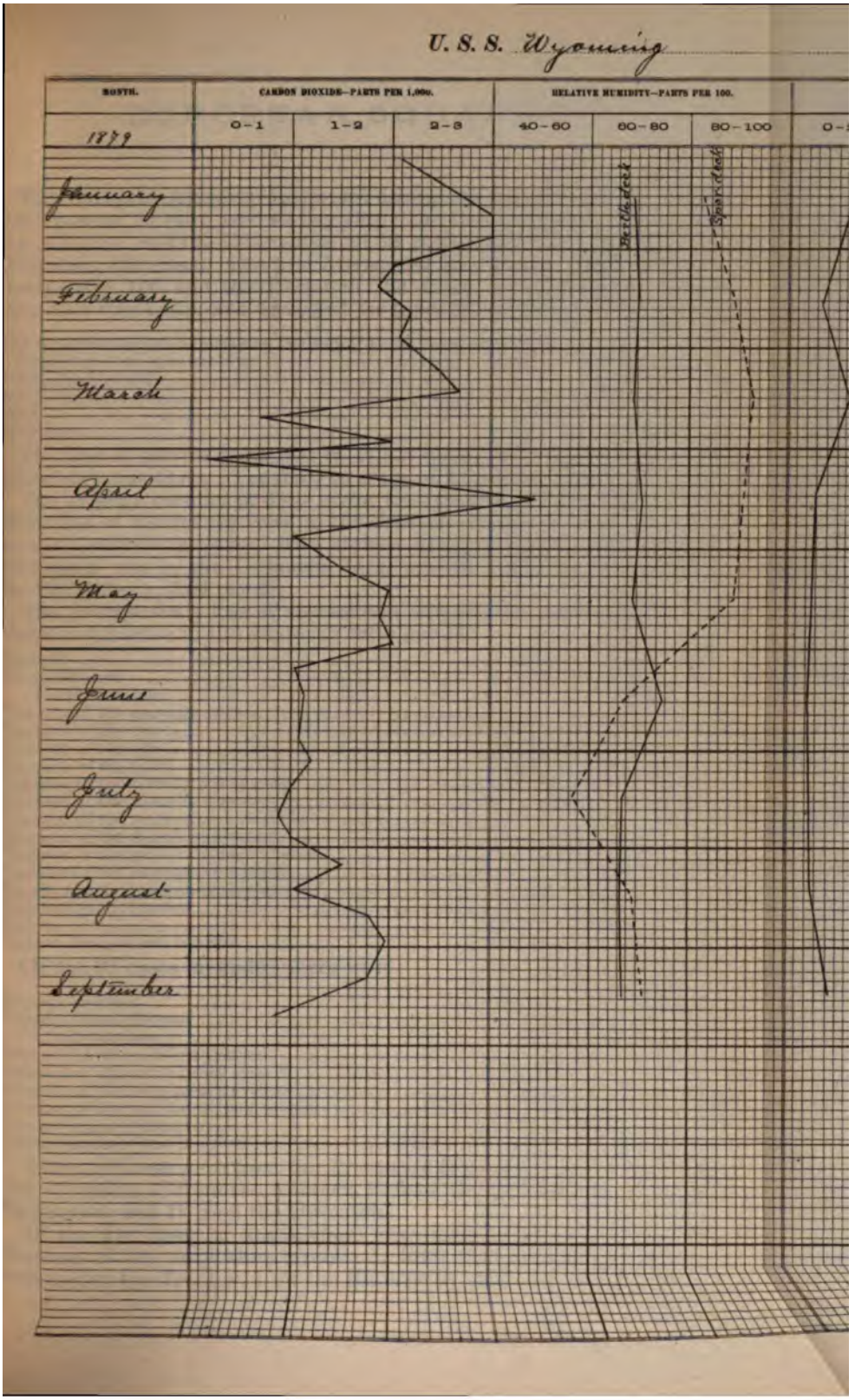
Sanitary regulations are limited to removal of the rubbish from the principal streets. Human excrement is thrown into the yards, corrals, open spaces, and often in the sandy streets, where it soon becomes reduced to a dry pulverizable odorless mass by the effects of the hot sun.

Rain, as before stated, is absent throughout the year, though a slight fall in April or May is an exception. Years pass sometimes without any rainfall at all. Agriculture at all times requires artificial irrigation, the water being led a long distance from the mountain streams.

Payta has a considerable trade with the interior, which produces cotton, sugar, rice, hides, sarsaparilla, and cattle. The beef is only a fair article, being generally tough. Great numbers of cattle are shipped from here for the Callao and Lima markets. They are carried by the steamers of the Pacific Steam Navigation Company, which touch weekly going to, and returning from Panama and Callao. Some forty miles by rail, supplies of the finest poultry grown in Peru can be obtained at very reasonable rates. Beef is so expensive that the people, as a class, live on fish, cooked by frying in oil. The neighboring waters abound in many varieties of most excellent food fish, and quite a trade is carried on with the coast towns in dried and salt fish. Rice is one of the chief articles of diet; also beans and corn. Three-fourths of the population have no knowledge of wheat flour. The principal portion of all the supplies are imported from the southern coast. Vegetables bring fabulous prices. There are none grown in the vicinity of Payta.

During the stay of the Pensacola in the harbor of Payta the highest and lowest temperature of the spar and berth decks were as follows: Spar-deck—highest 85°, lowest 76°; berth-deck—highest 87°; lowest 79°. The prevailing winds were from the southward and westward, and moderately strong in force.

U. S. S. Wyoming


MONTH.
CARBON DIOXIDE—PARTS PER 1,000.
RELATIVE HUMIDITY—PARTS PER 100.
1879
0-1
1-2
2-3
40-60
60-80
80-100
January
February
March
April
May
June
July
August
September

EUROPEAN SQUADRON.

The European squadron comprised during the year 1879 seven vessels: e Trenton, 2d rate, used as flag-ship; the Quinnebaug, the Wyoming, e Alliance, and the Enterprise, all 3d rates; the Gettysburg and the espatch, 4th rates. The first five served 365 days on the station; the ettysburg 106, and the Despatch 183 days. The total force of the uadron was 1,318, and corrected for time, amounted to 1,233.

		Per M.
he total number of admissions, including those remaining from the foregoing year, amounted to	2,054	1,665.9
ischarged, cured	1,972	1,599.3
valided	91	73.8
ed	5	4.0
ntinued	38	30.9

The loss of service amounted to 17,827 days. The daily average sick bsolute) was 48.82. The daily average sick (relative) was 37.04 per M. The average number of days under treatment was 8.68. The greatest ily loss of service occurred in the Trenton, 52.14 per M, and the least the Gettysburg, 24.83. The highest average number of days under eatment was in the Despatch, 15.20 per M, while the lowest was in e Gettysburg, 5.94 per M.

The average daily loss of service was distributed among the various isses of disease in the following ratio per M:

motic	1.07
nstitutional	8.11
Local diseases:	
eases of the nervous system	1.46
eases of the eye	.47
eases of the ear	
eases of the teeth	
eases of the circulatory system	.38
eases of the absorbent system	
eases of the respiratory system	3.95
eases of the digestive system	4.43
eases of the genito-urinary system	5.81
eases of the locomotive system	.18
eases of the integumentary system	5.36
n-malignant tumors	.12
isons	.33
olent diseases and injuries	5.98

Of the 91 cases invalided there were:

		Per M.
motic diseases	4	3.24
nstitutional diseases	25	20.27
Local diseases:		
eases of the nervous system	12	9.73
eases of the circulatory system	4	3.24
eases of the respiratory system	8	6.49
eases of the genito-urinary system	9	7.29
n-malignant tumors	2	1.62
olent diseases and injuries	9	7.29

Thirty of these were from the Trenton, 4 from the Gettysburg, 3 from Wyoming, 17 from the Alliance, 19 from the Quinnebaug, 7 from the terprise, and 11 from the Despatch.

Of the five cases of death, there were from zymotic disease 2, from eases of the respiratory system 1, from injuries and violence 2; 3 urred on the Trenton, 1 on the Enterprise, and 1 on the Wyoming.

The zymotic class furnished 190 cases, or 154.08 per M, viz: Erysipelas 4, febricula 1, cerebro-spinal meningitis 1, simple continued fever 27, typhoid fever 1, intermittent fever 142, remittent fever 4, vaccina 6, varioloid 4.

Erysipelas.—Two of these cases were on the Trenton, and 1 was invalided.

Cerebro-spinal fever.—This case occurred on board the Enterprise. Dr. Flint reports that "the patient was taken about noon of the 25th of February, 4 days after leaving Palermo, being restless and talkative, with mental hallucinations. He complained of pain and soreness of the body generally; there was fever, a rapid pulse, and vomiting. 26th.—Still delirious, restless, but with a clear appreciation of what was going on around him. At 1 p. m. he was seized with spasm, tetanic in character, lasting about three minutes. There was opisthotonos, trismus, and risus sardonicus, the patient crying out with evidence of great pain at the time of the seizure. The spasms continued at irregular intervals, and were more or less severe. There was hyperæsthesia of the skin, a touch sometimes producing a momentary spasm. Pupils dilated during the paroxysm; great pain in the back; prostration very rapidly followed; the tongue became dry and brown; sordes collected on the lips and teeth; pulse gradually failed, and he died at 11 p. m. in convulsions. Bromide of potassium was freely administered. The muscles continued rigid for some time, and livid discolorations of the neck and posterior surface of the body soon occurred." It is much to be regretted that no autopsy was held.

Simple continued fever.—In 22 of the 27 cases reported none were invalided.

Typhoid fever.—The single case of this occurred on the Alliance and proved fatal. The circumstances of its appearance were not reported.

Intermittent fever.—This disease was more particularly rife on the Enterprise, Quinnebaug, and Trenton, and formed the largest portion of the miasmatic diseases which occurred in the squadron.

Remittent fever only appeared in 4 cases.

Vaccina.—Of the 6 cases reported in which the men were disabled from duty, 4 occurred on the Trenton, in which the largest number of vaccinations was made. The following table will show the entire number of vaccinations in the squadron, and the results obtained:

Ships.	Presenting evidence of small-pox.		Presenting evidence of previous vaccination.		No evidence of previous vaccination.		Total.
	Successful.	Unsuccessful.	Successful.	Unsuccessful.	Successful.	Unsuccessful.	
Trenton	12	43	152	474	36	47	764
Quinnebaug	3	7	83	101	15	21	230
Wyoming	7	20	43	87	12	16	185
Total	22	70	278	662	63	84	1,179
Per cent. of cases	7.8		79.6		12.6		
Per cent. of successful	23.9		29.6		42.8		30.6

Varioloid.—All of these occurred on the Quinnebaug, at Nice, and 3 of them were invalided.

Constitutional diseases aggregated 273 cases, or 221.41 per M, viz: Adynamia 30, anæmia 3, hydrops 1, podagra 4, acute rheumatism 61, chronic rheumatism 71, primary syphilis 49, consecutive syphilis 54. Twenty-four of these were invalided, 20.27 per M, and three were continued. In this class, adynamia constituted 24.3 per M of the whole, of which 10.5 per M were invalided. These cases were notably the result of malarious and other cachexic affections and of climatic influences.

Rheumatism.—Diseases of this class supplied 107 per M of which 4 per M were invalided. The Quinnebaug reported the large number of 51, the Trenton 41, the Alliance 14, and the remainder occurred on the other vessels, causing in all a loss of 1,065 days.

Syphilis.—Syphilitic affections contributed 83.4 per M. of the cases of this group, of which 5.6 per M were invalided. This ratio is much larger than that of the Asiatic Station, and caused a loss to the service of 2,040 days, or the entire force for nearly a day and a half.

The diseases falling under the local groups were nearly four times more numerous than those classified as general diseases.

Of the nervous system there were recorded 76 cases, or 77.8 per M, viz: cephalalgia 11, chorea 1, dementia 3, epilepsy 4, insolatio 1, spinal irritation 2, melancholia 2, sea-sickness 6, neuralgia 46, paralysis 2, pleurodynia 14, vertigo 3. Of the whole number, 12, or 9.7 per M, were invalided. The Trenton had more than twice as many cases of this class than occurred on any other ship, and they were next in frequency on the Quinnebaug, and next on the Alliance. The predominating disease was neuralgia, of which the two first-named vessels furnished by far the largest number.

One of the cases of paralysis was reported by Dr. Dickson, of the Despatch. A landsman, aged 20, German, was admitted September 15, 1878, with primary syphilis, a large sore existing on the left edge of the prepuce, with a tight congenital phimosis. On the night of October 21 facial paralysis occurred of the right side from exposure of that side to a draught of air entering an open port. The angle of the mouth was drawn to the left side, and there was an inability to close the right eye, the lid falling upon the cheek. He complained also of food accumulating between the jaws and cheek of the right side; the ala nasi of that side was depressed and articulation indistinct. He performed his duties as cook up to November 19, when he complained of feeling weak, with pains in various parts of the body, and an irritable condition of the eye. November 28, he was returned to duty, but to continue treatment and remain under observation. January 3, 1879, readmitted, having been seized on the previous day with a chill, vomiting, severe headache, and excessive lachrymation from the right eye. He had never recovered control of the face since the former attack, the loss of power being most marked in the lower lid. Up to January 15 there was little or no improvement, and he was at that date discharged from the service at his own request.

Eye.—Ocular affections were noted in 21.81 per M, viz, amaurosis, 1; conjunctivitis, 5; iritis, 9; ophthalmia, 1; ecchymosis, 1. All recovered and were returned to duty. The majority of these cases occurred on the Trenton.

Ear.—There were but two cases of ear affections reported, or 1.62 per M; 1 case of otalgia, and 1 of otitis, both of which occurred on the Trenton.

Teeth.—But a single case of odontalgia was reported—from the Wyoming.

Circulatory system.—There were nine cases of disease of this system returned, viz, 3 of valvular disease of the heart, and 6 of palpitation—a ratio of 7.29 per M. Of these, 3 of the former and 1 of the latter—4 in all—were invalided; a ratio of 3.24 per M. Three of the cases of this class were on the Trenton, and the remainder on the other ships.

Absorbent system.—Twenty-nine cases were returned, all of adenitis, a ratio of 23.5 per M. Under this head are grouped enlargement of the cervical glands, as well as sympathetic swelling of the inguinal glands, not due to venereal disease. All were discharged to duty, and the most of them occurred on the Trenton.

Respiratory system.—Of this class there was an aggregate of 213 cases, a ratio of 173.5 per M, as follows: Acute bronchitis, 57; chronic bronchitis, 4; catarrh, 122; hæmoptysis, 5; laryngitis, 3; acute pneumonic phthisis, 1; chronic pneumonic phthisis, 6; pleuritis, 2; pneumonia, 3. Of these, 18 were invalided, or 14.6 per M, viz, acute bronchitis, 1; catarrh, 3; hæmoptysis, 1; acute phthisis, 1; chronic pneumonic phthisis, 5; and pneumonia, 7. One case of the latter disease died—.81 per M.

Nautical hardships are well calculated to produce a numerous representation of this class of cases, of which the predominant forms were, arranged in order of frequency, catarrh, acute bronchitis, and pneumonia. Nearly 38 per cent. of the whole occurred on the Trenton, a percentage double that of any other ship. Next in frequency the diseases of this class occurred on the Quinnebaug, this supplying 20 per cent. of the whole; next the Alliance, and then the Enterprise.

Digestive system.—The affections of this class, which are frequent on board ship, numbered 423 cases in the squadron, a ratio of 343.9 per M; of these, 16 were cholera morbus; 29 colic; constipation, 85; acute diarrhœa, 141; chronic diarrhœa, 2; acute dysentery, 4; dyspepsia, 34; enteritis, 2; fistula in ano, 3; gastritis, 3; hæmatemesis, 2; hæmorrhoids, 6; acute hepatitis, 2; icterus, 11; pharyngitis, 11; prolapsus ani, 1; tonsillitis, 7; parasites, 1. It will be noticed that the most common of these affectios on the ships of this station were acute diarrhœa, constipation, tonsillitis, dyspepsia, and colic. The number invalided reached 8, a ratio of 6.49 per M. These affections were most frequent on the Trenton, 161.3 per M, a ratio nearly three times as large as on the Quinnebaug, and eight times larger than that on the Alliance.

Genito-urinary system.—There were 181 cases in this class, or a ratio of 146.8 per M, viz, balanitis, 3; chancroid, 36; cystitis, 2; hydrocele, 3; nephritis, 1; orchitis, 39; paraphymosis, 2; phymosis, 4; spermatorrhœa, 1; stricures of the urethra, 7; inflammation of the spermatic cord, 1; gonorrhœa, 82; 9 were invalided, a ratio of 7.29 per M. The most frequent of these diseases occurring on ship-board are gonorrhœa, chancroid, and orchitis, and the venereal diseases form upwards of 65 per cent. of the group. They caused a loss to the service of 1,863 days, equivalent to the entire force of the squadron for a day and a half. These affections, in addition to the venereal diseases of class 2, occasioned a loss of 3,803 days, or the whole force for upwards of 3 days. The Trenton suffered nearly greater than all the other ships put together, supplying a ratio of 87.5 per M, an excess indeed over every other ship in the Navy; more than every third man had some form of venereal disease. The Quinnebaug had a ratio of 24.3 per M, and the Wyoming of 14.6 per M.

Locomotive system.—There were of this class 12 cases of disease, or 9.73 per M, viz, arthritis, 2; ostitis, 1; periostitis, 5; synovitis, 4. They occurred on the Alliance, Quinnebaug, and Wyoming.

Integumentary system.—The number of cases of this class, usually frequent on shipboard, amounted in this squadron to 216, viz, abscess, 72; alopecia, 1; anthrax, 2; ecthyma, 2; eczema, 5; erythema, 2; furunculus, 70; cellulitis, 1; onychia, 2; paronychia, 13; pernio, 1; porrigo, 1; psoriasis, 6; rupia, 1; scabies, 2; tinea, 5; ingrowing nail, 1; ulcus, 24; and urticaria, 4. The ratio of these cases was 193.2 per M, causing a loss to the service of 2,041 days. The most common diseases of this class, as seen above, are abscess, furunculus, ulcus, and paronychia. The Trenton shows the largest ratio of this class, viz, 59.2 per M; then comes the Quinnebaug, 38.9 per M; the Enterprise, 25.9 per M; the Wyoming, 24.3 per M; and small ratios on the other ships.

Non-malignant tumors.—There were 7 cases in all, or 5.07 per M, viz, condyloma, 1; cystis, 2; lipoma, 3; sarcoma, 1. Of these, 2, condyloma, 1; sarcoma, 1, were invalided. The Trenton furnished 3 of the cases, and the Wyoming 2.

Violent diseases and injuries.—Of this class there were reported 327 cases, a ratio of 265.2 per M, viz, abrasion, 10; burn, 14; concussion of the brain, 1; contusion, 120; fracture, 7; hernia, 2; luxation, 4; sprain, 68; drowning, 2; contused wounds, 48; incised, 22; lacerated, 17; puncture, 11; and suicide, 1. There were invalided 9, a ratio of 7.29 per M: 3 of contusion, 2 of fracture, and 4 of dislocation; 2 died, the cases of concussion of the brain and suicide. The latter was by gunshot, the charge entering the left side of the head, carrying away the mastoid process and half the ear. The man died half an hour afterward.

The most common form of injuries encountered on board ship are contusions, sprains, and the various forms of wounds, notably the contused. On the Trenton the ratio of the diseases of this class was 102.1 per M; Quinnebaug, 54.3 per M; Wyoming, 31.6 per M; Enterprise, 5.67 per M. In one of the cases of contused wound on the Quinnebaug the fingers were crushed in the engine room, necessitating amputation of several.

Poisons.—Of this class there were reported 49 cases, or 39.7 per M, viz, debauch, 48; habitual drunkenness, 1. The abuse of alcohol was most common in the Trenton, 102.1 per M; on the Quinnebaug the ratio was 54.3 per M; Wyoming, 31.6 per M; Enterprise, 26.7 per M; and Alliance, 28.9 per M.

TABLE I.—*Showing the force on each ship, the number admitted and discharged, number of days under treatment, and average per M of force on the European Station.*

Vessel.	Strength.	Strength corrected for time.	Admitted.						Discharged.				Continued.	Number of sick-days.	Average number of days under treatment.	Daily average number of sick.		Number admitted per M of strength.
			From last year.	First quarter.	Second quarter.	Third quarter.	Fourth quarter.	Total.	Cured.	Invalided.	Died.	Total.				Absolute.	Per M of strength.	
Trenton, 2d rate, 2,300 tons; wood, screw; service 365 days	415	415	8	246	249	215	145	863	812	30	2	844	19	7,901	9.15+	21.64	17.55	699.91
Quinnebaug, 3d rate, 910 tons; wood, screw; service 365 days	230	230	10	120	111	122	52	415	390	19	....	409	6	2,962	7.13+	8.11	6.57	336.57
Wyoming, 3d rate, 726 tons; wood, screw; service 365 days	194	194	5	55	50	49	45	204	194	3	1	198	6	1,983	9.72	5.43	4.40	165.45
Alliance, 3d rate, 615 tons; wood, screw; service 365 days	160	160	4	50	46	50	47	197	176	17	1	194	3	1,893	9.60	5.18	4.20	159.77
Enterprise, 3d rate, 615 tons; wood, screw; service 365 days	176	176	8	87	66	49	61	271	259	7	1	267	4	2,007	7.40+	5.47	4.43	219.78
Gettysburg, 4th rate, 518 tons; wood, paddle; service 126 days	90	31	2	43	9	.....	.....	54	50	4	....	54	....	321	5.94+	.87	0.70	43.80
Despatch, 4th rate, 730 tons; wood, screw; service 181 days	53	27	....	12	38	.....	.....	50	39	11	....	50	....	760	15.20	2.08	1.68	40.55
Total	1,318	1,233	37	613	569	485	350	2,054	1,920	91	5	2,016	38	17,827	8.68+	48.82	39.59	1,558.4

Station.

Diseases and injuries.	Cases.		No. of sick-days.	Average number of men sick daily.		Average number of days under treatment.	Discharged to duty.		Invalided.		Died.		Continued.
	Number.	Per 1,000 of force.		Absolute.	Ratio per 1,000 of force.		Number.	Per 1,000 of force.	Number.	Per 1,000 of force.	Number.	Per 1,000 of force.	
GENERAL DISEASES.													
1.—Zymotic.													
Erysipelas	4	3.244	45	0.12	0.09	11.2	3	2.43	1	.81	.....	.....	.....
Febricula	1	.810	1	.....	.....	1	1	.81	.....	.....	.....	.....	.....
Febris cerebro-spinalis	1	.810	1	.....	.....	1	.....	.....	.....	.....	1	.81	.....
Febris continua simplex	27	21.814	456	1.25	1.01	16.8	27	21.81	.....	.....	.....	.....	.....
Febris enterica	1	.810	9	.....	.....	9	.....	.81	.....	.....	1	.81	.....
Febris intermittens	142	115.166	588	1.61	1.3	4.1	140	113.54	.....	.....	.....	.....	2
Febris remittens	4	3.244	80	0.21	.17	20	4	3.24	.....	.....	.....	.....	.....
Vaccina	6	4.866	6	.....	.....	1	3	2.43	.....	.....	.....	.....	3
Varioloides	4	3.244	26	0.07	.05	6.5	.....	.....	3	2.43	.....	.....	1
Aggregate	190	154.08	1,212	3.32	1.07	2.7	178	144.36	4	3.24	2	1.62	6
2.—Constitutional diseases.													
Adynamia	30	24.330	534	1.46	1.18	17.8	17	13.78	13	10.54	.....	.....	.....
Anæmia	3	2.433	96	0.26	0.21	32	3	2.43	.....	.....	.....	.....	.....
Hydrops	1	.810	3	0	.....	3	1	.81	.....	.....	.....	.....	.....
Podagra	4	3.244	28	0.07	0.05	7	4	3.24	.....	.....	.....	.....	.....
Rheumatismus acutus	61	49.472	519	1.60	1.36	8.5	58	47.03	1	.81	.....	.....	2
Rheumatismus chronicus	71	57.574	546	1.49	1.2	7.7	67	54.33	4	3.24	.....	.....	.....
Syphilis primitiva	49	39.740	1,221	3.34	2.7	25	45	36.49	3	2.43	.....	.....	1
Syphilis consecutiva	54	43.795	717	1.97	1.6	13.3	50	45.51	4	3.24	.....	.....	.....
Aggregate	273	221.41	3,664	10	8.11	12.3	245	198.70	25	20.27	.....	.....	3
LOCAL DISEASES.													
1.—Diseases of the nervous system.													
Cephalalgia	11	8.921	15	.....	.....	1.3	11	8.92	.....	.....	.....	.....	.....
Chorea	1	.810	5	.....	.....	5	1	.81	.....	.....	.....	.....	.....
Dementia	3	2.433	23	0.06	.04	7.6	1	.81	2	1.62	.....	.....	.....
Epilepsia	4	3.244	94	0.25	.20	23.5	1	.81	3	2.43	.....	.....	.....
Insolatio	1	.810	7	.....	.....	7	1	.81	.....	.....	.....	.....	.....

TABLE II.—*Showing the number of cases, the discharged, the invalided, and the dead for each disease, etc.*—Continued.

Diseases and injuries.	Cases.		No. of sick-days.	Average number of men sick daily.		Average number of days under treatment.	Discharged to duty.		Invalided.		Died.		Continued.
	Number.	Per 1,000 of force.		Absolute.	Ratio per 1,000 of force.		Number.	Per 1,000 of force.	Number.	Per 1,000 of force.	Number.	Per 1,000 of force.	
LOCAL DISEASES—Continued.													
1.—*Diseases of the nervous system*—Continued.													
Irritatio spinalis	2	1.622	15	.....	.....	7.5	2	1.62	.....	.....	.....	.....	.....
Mania	1	.810	22	0.06	.04	22	.....	.....	1	.81	.....	.....	.....
Melancholia	2	1.622	114	0.31	.25	57	.....	.....	2	1.62	.....	.....	.....
Nausea marina	6	4.866	18	0.04	.03	3	5	4.05	1	.81	.....	.....	.....
Neuralgia	46	37.307	179	0.46	.37	3.9	46	37.3	.....	.....	.....	.....	.....
Paralysis	2	1.622	5	.....	.....	2.5	1	.81	1	.81	.....	.....	.....
Phenrodynia	14	11.354	142	0.39	.31	10.1	12	9.73	2	1.62	.....	.....	.....
Vertigo	3	2.433	19	0.04	.03	6.3	3	2.43	.....	.....	.....	.....	.....
Aggregate	96	77.8	658	1.8	1.46	6.8	84	68.12	12	9.73	.....	.....	.....
2.—*Diseases of the eye.*													
Amaurosis	1	.810	6	.....	.....	6	1	.81	.....	.....	.....	.....	.....
Conjunctivitis	15	12.165	60	0.16	0.13	4	15	12.16	.....	.....	.....	.....	.....
Ecchymosis	1	.810	9	.....	.....	9	1	.81	.....	.....	.....	.....	.....
Iritis	9	7.299	139	0.38	0.3	15.4	9	7.29	.....	.....	.....	.....	.....
Ophthalmia	1	.810	1	.....	.....	1	1	.81	.....	.....	.....	.....	.....
Aggregate	27	21.81	215	0.58	0.47	8	27	21.81	.....	.....	.....	.....	.....
3.—*Diseases of the ear.*													
Otalgia	1	.810	1	.....	.....	1	1	.81	.....	.....	.....	.....	.....
Otitis	1	.810	2	.....	.....	2	1	.81	.....	.....	.....	.....	.....
Aggregate	2	1.62	3	.....	.....	1.5	2	1.62	.....	.....	.....	.....	.....
4.—*Diseases of the teeth.*													
Odontalgia	1	.810	4	.....	.....	4	1	.81	.....	.....	.....	.....	.....
Aggregate	1	.81	4	.....	.....	4	1	.81	.....	.....	.....	.....	.....

5.—*Diseases of the circulatory system.*													
Morbi valvularum cordis	3	2.433	118	0.31	0.25	39.3	.....	.....	3	2.43	.....	.....	.....
Palpitatio	6	4.866	56	0.15	0.12	8	5	4.05	1	.81	.....	.....	.....
Aggregate	9	7.29	174	0.47	0.38	19.1	5	4.05	4	3.24	.....	.....	.....
6.—*Diseases of the absorbent system.*													
Adenitis	29	23.519	450	0.5	0.04	15.55	25	20.27	.....	.....	.....	.....	4
Aggregate	29	23.519	450	0.5	0.04	15.55	25	20.27	.....	.....	.....	.....	4
7.—*Diseases of the respiratory system.*													
Bronchitis acuta	57	46.228	351	0.95	0.77	6.1	55	44.6	1	.81	.....	.....	1
Bronchitis chronica	4	3.244	87	0.21	0.17	21.75	4	3.24	.....	.....	.....	.....	.....
Catarrhus	122	98.945	695	1.9	1.54	5.7	118	95.70	3	2.43	.....	.....	1
Hæmoptysis	5	4.055	147	0.40	0.32	29.4	4	3.24	1	.81	.....	.....	.....
Laryngitis	3	2.433	10	.....	.....	3.33	3	2.43	.....	.....	.....	.....	.....
Phthisis pneumonica acuta	1	.810	31	0.08	0.06	31	.....	.....	1	.81	.....	.....	.....
Phthisis pneumonica chronica	6	4.866	155	0.34	0.27	20.8	.....	.....	5	4.05	.....	.....	1
Pleuritis	2	1.622	107	0.29	0.23	53.5	2	1.62	.....	.....	.....	.....	.....
Pneumonia	13	10.543	228	0.62	0.5	17.53	5	4.05	7	5.67	1	.81	.....
Aggregate	213	173.56	1.781	4.87	3.95	8.03	191	155.71	18	14.60	1	.81	3
8.—*Diseases of the digestive system.*													
Cholera morbus	16	12.976	30	0.08	0.06	1.46	16	12.97	.....	.....	.....	.....	.....
Colica	29	23.519	91	0.24	0.19	3.14	28	22.70	1	.81	.....	.....	.....
Constipatio	85	68.953	362	0.99	0.8	4.25	85	68.95	.....	.....	.....	.....	.....
Diarrhœa acuta	141	114.355	552	1.51	1.22	39.14	138	111.11	1	.81	.....	.....	2
Diarrhœa chronica	2	1.622	13	.....	.....	6.5	2	1.62	.....	.....	.....	.....	.....
Dysenteria acuta	4	3.244	27	0.07	0.05	6.75	3	2.43	1	.81	.....	.....	.....
Dyspepsia	34	27.574	64	0.17	0.13	1.88	32	25.95	2	1.62	.....	.....	.....
Enteritis	2	1.622	13	.....	.....	6.5	1	.81	1	.81	.....	.....	.....
Fistula in ano	3	2.433	53	0.14	0.11	17.66	3	2.43	.....	.....	.....	.....	.....
Gastritis	3	3.244	14	.....	.....	4.66	3	2.43	.....	.....	.....	.....	.....
Hæmatemesis	2	1.622	24	0.06	0.04	12	1	181	.....	.....	.....	.....	1
Hæmorrhois	6	4.866	48	0.13	0.10	8	6	4.86	.....	.....	.....	.....	.....
Hepatitis acuta	2	1.622	14	.....	.....	7	2	1.62	.....	.....	.....	.....	.....
Icterus	11	8.921	167	0.45	0.36	15.18	11	8.92	.....	.....	.....	.....	.....
Pharyngitis	10	8.110	42	0.11	0.08	4.2	10	8.11	.....	.....	.....	.....	.....
Prolapsus ani	1	.810	29	0.08	0.06	29	1	.81	.....	.....	.....	.....	.....
Tonsilitus	71	57.583	456	1.24	1.00	6.41	69	55.96	2	1.62	.....	.....	1
Vermes	1	.81	4	.....	.....	4	.....	.....	.....	.....	.....	.....	.....
Aggregate	423	343.07	2,003	5.47	4.43	4.73	411	333.33	8	6.49	.....	.....	4
9.—*Diseases of the genito urinary system.*													
Balanitis	3	2.433	14	.....	.....	4.66	3	2.43	.....	.....	.....	.....	.....
Chancroid	36	29.196	690	1.9	1.54	19.16	33	26.76	.....	.....	.....	.....	3
Cystitis	2	1.622	10	.....	.....	5	2	1.62	.....	.....	.....	.....	.....
Gonorrhœa	82	66.504	1,173	3.21	2.57	.....	75	60.82	5	4.05	.....	.....	2

TABLE II.—*Showing the number of cases, the discharged, the invalided, and the dead for each disease, etc.*—Continued.

Diseases and injuries.	Cases.		No. of sick-days.	Average number of men sick daily.		Average number of days under treatment.	Discharged to duty.		Invalided.		Died.		Continued.
	Number.	Per 1,000 of force.		Absolute.	Ratio per 1,000 of force.		Number.	Per 1,000 of force.	Number.	Per 1,000 of force.	Number.	Per 1,000 of force.	
LOCAL DISEASES—Continued.													
9.—*Diseases of the genito-urinary system*—Continued.													
Hydrocele	3	2.433	30	0.08	0.07	10	3	2.43	.....	.....	.....	.....	.....
Nephritis	1	.810	4	.....	.....	4	1	.81	.....	.....	.....	.....	.....
Orchitis	39	31.629	543	1.48	0.98	14	35	28.38	4	3.24	.....	.....	.....
Paraphymosis	2	1.622	3	.....	.....	1.5	2	1.62	.....	.....	.....	.....	.....
Phymosis	4	3.244	77	0.21	0.17	19.25	3	2.43	.....	.....	.....	.....	1
Spermatorrhœa	1	.810	30	0.08	0.06	30	1	.81	.....	.....	.....	.....	.....
Urethræ strictura	7	5.677	43	0.11	0.08	6.14	7	5.67	.....	.....	.....	.....	.....
Inflam. spermatic. cord	1	.810	3	.....	.....	3	1	.81	.....	.....	.....	.....	.....
Aggregate	181	146.8	2,620	7.17	5.81	6.8	166	134.62	9	6.29	.....	.....	6
10.—*Diseases of the locomotive system.*													
Arthritis	2	1.622	14	.....	.....	7	2	1.62	.....	.....	.....	.....	.....
Ostitis	1	.810	4	.....	.....	4	1	.81	.....	.....	.....	.....	.....
Periostitis	5	4.055	51	0.14	0.11	10.2	5	4.05	.....	.....	.....	.....	.....
Synovitis	4	3.244	16	0.04	0.03	4	4	3.24	.....	.....	.....	.....	.....
Aggregate	12	9.73	85	0.23	0.18	7	12	9.73	.....	.....	.....	.....	.....
11.—*Diseases of the integumentary system.*													
Abscessus	72	58.393	697	1.91	1.54	9.68	72	58.39	.....	.....	.....	.....	.....
Alopecia	1	.81	21	0.05	0.04	21	1	.81	.....	.....	.....	.....	.....
Anthrax	2	1.622	15	.....	.....	7.5	2	1.62	.....	.....	.....	.....	.....
Ecthyma	2	1.622	7	.....	.....	3.5	2	1.62	.....	.....	.....	.....	.....
Eczema	5	4.055	84	0.23	0.18	16.8	5	2.05	.....	.....	.....	.....	.....
Erythema	2	1.622	37	0.1	.....	18.5	2	1.62	.....	.....	.....	.....	.....
Furunculus	70	56.774	393	1.07	0.86	5.6	70	56.77	.....	.....	.....	.....	.....
Cellulitis	1	.810	2	.....	.....	2	1	.81	.....	.....	.....	.....	.....
Onychia	2	1.622	71	0.22	0.17	35.5	2	1.62	.....	.....	.....	.....	.....
Paronychia	13	10.543	71	0.22	0.17	5.47	11	8.92	.....	.....	.....	.....	2
Pernio	1	.810	2	.....	.....	2	1	.81	.....	.....	.....	.....	.....
Porrigo	1	.810	19	0.05	0.04	19	1	.81	.....	.....	.....	.....	.....

Psoriasis	6	.866	77	0.23	0.18	12.83	6	4.86					
Rupia	1	4.810	33	0.09	0.07	33	1	.81					
Scabies	2	1.622	18	0.04	0.03	9	2	1.62					
Tinea	5	4.005	55	0.17	0.13	11	5	4.05					
Unguis involutis	1	.810	29	0.07	0.05	29	1	.81					
Ulcus	24	19.464	400	1.09	0.88	16.66	24	19.46					
Urticaria	4	3.244	10			2.5	4	3.24					
Aggregate	215	193.29	2,041	5.59	4.53	9.45	213	172.84					2
POISONS.													
Ebriositas	48	38.929	151	.41	0.33	3.14	48	38.92					
Alcoholismus	1	.810	5			5	1	.81					
Aggregate	49	39.73	156	0.41	0.33	3.18	49	39.73					
NON-MALIGNANT TUMORS.													
Condyloma	1	.810	13			13			1	.81			
Cystis	2	1.622	3	0.08	0.06	15	2	1.62					
Lipoma	3	2.433	5			1.66	3	2.43					
Sarcoma	1	.810	9			9			1	.81			
Aggregate	7	5.67	57	0.15	0.12	8.14	5	4.05	2	1.62			
VIOLENT DISEASES AND DEATHS.													
Abrasio	10	8.110	35	0.09	0.07	3.5	10	8.11					
Ambustio	14	11.354	71	0.19	0.15	5	13	10.54					1
Concussio cerebri	1	.810	1			1		.81			1	.81	
Contusio	120	97.323	609	1.91	1.54	5.82	118	95.7					2
Fractura	7	5.677	206	0.50	0.45	29.43	4	3.24	3	2.43			
Hernia	2	1.622	104	0.28	0.22	52			2	1.62			
Luxatio	4	3.244	105	0.28	0.22	26.25	4	3.24					
Stremma	68	55.149	486	1.33	1.08	7	63	51.09	4	3.24			1
Submersio	2	1.622	2			2	2	1.62					
Vulnus contusum	48	38.929	491	1.34	1.08	10	44	35.60					4
Vulnus incisum	22	17.842	204	0.55	0.44	9.27	22	17.84					
Vulnus laceratum	17	13.787	260	0.71	0.57	15.3	17	13.78					
Vulnus punctum	11	8.921	39	0.1		3.54	9	7.29					2
Suicide	1	.810	1			1		.81			1	.81	
Aggregate	327	265.20	2,704	7.40	6.00	8.26	306	248.17	9	7.29	2	1.62	10
Grand aggregate	2,054	1,665.85	17,827	49.84	39.61	8.68	1,920	1,557.17	91	73.80	5	4.05	38

TABLE III.—*Showing the number of cases, the invalided and dead for each disease on each ship on the European Station.*

Diseases and injuries.	Trenton.			Alliance.			Quinnebaug.			Enterprise.			Wyoming.			Gettysburg.			Dispatch.		
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
GENERAL DISEASES.																					
1.—*Zymotic.*																					
Erysipelas	.....	.....	.....	2	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Febricula	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Febris cerebro-spinalis	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Febris continua simplex	22	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Febris enterica	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Febris intermittens	38	.....	.....	6	.....	.....	29	.....	.....	48	.....	.....	16	.....	.....	4	.....	.....	1	.....	.....
Febris remittens	1	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Vaccina	5	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Varioloides	.....	.....	.....	.....	.....	.....	4	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Aggregate	66	.....	.....	9	1	1	38	3	.....	51	.....	1	18	.....	.....	5	.....	.....	2	.....	.....
Ratio per M	53.52	.....	.....	7.29	.81	.....	30.81	2.43	.....	42.17	.....	.81	14.7	.....	.....	4.05	.....	.....	1.62	.....	.....
2.—*Constitutional diseases.*																					
Adynamia	1	1	.....	8	6	.....	15	4	.....	.....	.....	.....	.....	.....	.....	2	1	.....	4	1	.....
Anæmia	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hydrops	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Podagra	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rheumatismus acutus	36	.....	.....	2	.....	.....	9	1	.....	7	.....	.....	7	.....	.....	.....	.....	.....	.....	.....	.....
Rheumatismus chronicus	5	.....	.....	12	2	.....	42	2	.....	3	.....	.....	2	.....	.....	3	.....	.....	4	.....	.....
Syphilis primitiva	25	1	.....	.....	.....	.....	2	.....	.....	13	.....	.....	8	2	.....	.....	.....	.....	1	.....	.....
Syphilis consecutiva	42	1	.....	4	1	.....	2	.....	.....	3	.....	.....	2	1	.....	.....	.....	.....	1	1	.....
Aggregate	117	3	.....	26	9	.....	70	7	.....	26	.....	.....	19	3	.....	5	1	.....	10	2	.....
Ratio per M	94.89	2.43	.....	21.09	7.29	.....	56.77	5.67	.....	21.09	.....	.....	15.49	2.43	.....	4.05	.....	.....	8.11	1.62	.....
LOCAL DISEASES.																					
1.—*Diseases of the nervous system.*																					
Cephalalgia	3	.....	.....	.....	.....	.....	6	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Chorea	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dementia	1	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....
Epilepsia	.....	.....	.....	1	1	.....	1	1	.....	1	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....

Insolatio																			1			
Irritatio spinalis													2									
Mania	1	1																				
Melancholia	1	1																	1	1		
Nausea marina	2						3	1											1			
Neuralgia	17			11			4			3			5			2			4			
Paralysis																2	1					
Pleurodynia	5			4	1		4	1		1												
Vertigo	3																					
Aggregate	33	2		17	3		19	3		6			8			5	2		8	2		
Ratio per M.	26.76	1.62		13.78	2.43		15.49	2.43		4.86			6.48			4.05	1.62		6.48	1.62		
2.—Diseases of the eye.																						
Amaurosis							1															
Conjunctivitis	7			3			2			1			2									
Iritis	6									3												
Ophthalmia				1												1						
Ecchymosis																						
Aggregate	13			4			3			4			2			1						
Ratio per M.	10.54			3.24			2.43			3.24			1.62			.81						
3.—Diseases of the ear.																						
Otalgia	1																					
Otitis	1																					
Aggregate	2																					
Ratio per M.	1.62																					
4.—Diseases of the teeth.																						
Odontalgia													1									
Aggregate													1									
Ratio per M.													.81									
5.—Diseases of the circulatory system.																						
Morbi valvularum cordis							1	1		1	1								1	1		
Palpitatio	3	1		1									1			1						
Aggregate	3	1		1			1	1		1	1		1			1			1	1		
Ratio per M.	2.43	.81		.81			.81	.81		.81	.81		.81			.81			.81	.81		

TABLE III.—*Showing the number of cases, the invalided and dead for each disease on each ship on the European Station*—Continued.

Diseases and injuries.	Trenton.			Alliance.			Quinnebang.			Enterprise.			Wyoming.			Gettysburg.			Dispatch.		
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
LOCAL DISEASES—Continued.																					
6.—Diseases of the absorbent system.																					
Adenitis	12	.....	.....	3	.....	.....	5	.....	.....	2	.....	.....	7	.....	.....	.....	.....	.....	.....	.....	.....
Aggregate	12	.....	.....	3	.....	.....	5	.....	.....	2	.....	.....	7	.....	.....	.....	.....	.....	.....	.....	.....
Ratio per M.	9.73	.....	.....	2.43	.....	.....	4.05	.....	.....	1.62	.....	.....	5.67	.....	.....	.....	.....	.....	.....	.....	.....
7.—Diseases of the respiratory system.																					
Bronchitis acuta	14	.....	.....	6	.....	.....	7	1	.....	13	.....	.....	6	.....	.....	10	.....	.....	1	.....	.....
Bronchitis chronica	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Catarrhus	55	2	.....	27	.....	.....	32	1	.....	7	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Hæmoptysis	3	1	.....	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laryngitis	.....	.....	.....	2	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Phthisis pneumonica acuta	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Phthisis pneumonica chronica	4	3	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....
Pleuritis	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Pneumonia	4	1	1	4	2	.....	.....	.....	.....	4	3	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
Aggregate	80	7	1	39	2	.....	43	3	.....	29	4	.....	8	.....	.....	11	.....	.....	3	2	.....
Ratio per M.	64.86	5.67	.81	31.63	1.62	.....	34.73	2.43	.....	23.52	3.24	.....	6.48	.....	.....	8.92	.....	.....	2.43	1.62	.....
8.—Diseases of the digestive system.																					
Cholera morbus	1	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	10	.....	.....	.....	.....	.....	1	.....	.....
Colica	11	.....	.....	6	1	.....	2	.....	.....	5	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....
Constipatio	75	.....	.....	6	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Diarrhœa acuta	47	.....	.....	7	.....	.....	44	.....	.....	33	1	.....	5	.....	.....	1	.....	.....	2	.....	.....
Diarrhœa chronica	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dysenteria acuta	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	2	.....	.....	.....	.....	.....	4	.....	.....

Hepatitis acuta							1						1							
Icterus	3			1						4			2					1		
Pharyngitis	4						1						4			1				
Prolapsus ani													1							
Tonsillitis	40	2		1			9			10			7			4				
Vermes													1							
Aggregate	199	3		26	2		74			65	2		43			7		9	1	
Ratio per M	161.31	2.43		21.0	1.62		60.			52.71	1.62		34.87			5.67		7.29	.81	
9.—*Diseases of the genito-urinary system.*																				
Balanitis	1						2													
Chancroid	29			1			4						1			1				
Cystitis							1									1				
Gonorrhœa	49	3		2			14	1		3			8			2		4	1	
Hydrocele	3																			
Nephritis													1							
Orchitis	18	4		1			6			5			7			2				
Paraphymosis	2																			
Phymosis							3						1							
Spermatorrhœa	1																			
Urethræ strictura	5			2																
Inflamma. spermatic. cord																1				
Aggregate	108	7		6			30	1		8			18			7		4	1	
Ratio per M	87.54	5.67		4.86			24.33	.81		6.48			14.6			5.67		3.24	.81	
10.—*Diseases of the locomotive system.*																				
Arthritis							2													
Ostitis							1													
Periostitis				5																
Synovitis										1			3							
Aggregate				5			3			1			3							
Ratio per M				4.05			2.43			.81			2.43							

TABLE III.—*Showing the number of cases, the invalided and dead for each disease on each ship on the European Station*—Continued.

Diseases and injuries.	Trenton.			Alliance.			Quinnebaug.			Enterprise.			Wyoming.			Gettysburg.			Dispatch.		
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
LOCAL DISEASES—Continued.																					
11.—*Diseases of the integumentary system.*																					
Abscessus	22	.....	.....	12	.....	.....	17	.....	.....	9	.....	.....	11	.....	.....	1	.....	.....	.....	.....	.....
Alopecia	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Anthrax	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ecthyma	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Eczema	4	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Erythema	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Furunculus	15	.....	.....	12	.....	.....	15	.....	.....	12	.....	.....	14	.....	.....	2	.....	.....	.....	.....	.....
Cellulitis	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Onychia	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Paronychia	4	.....	.....	.....	.....	.....	1	.....	.....	6	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....
Pernio	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Porrigo	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Psoriasis	5	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rupia	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Scabies	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....
Tinea	3	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Unguis involutis	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ulcus	11	.....	.....	.....	.....	.....	6	.....	.....	4	.....	.....	1	.....	.....	2	.....	.....	.....	.....	.....
Urticaria	3	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Aggregate	73	.....	.....	27	.....	.....	48	.....	.....	32	.....	.....	30	.....	.....	5	.....	.....	.....	.....	.....
Ratio per M	59.2	.....	.....	21.9	.....	.....	38.93	.....	.....	28.95	.....	.....	24.33	.....	.....	4.05	.....	.....	.....	.....	.....
NON-MALIGNANT TUMORS.																					
Condyloma	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cystis	1	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lipoma	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....
Sarcoma	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Aggregate	3	2	.....	.....	.....	.....	1	.....	.....	1	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....
Ratio per M	2.43	1.62	.....	.....	.....	.....	.81	.....	.....	.81	.....	.....	1.62	.....	.....	.....	.....	.....	.....	.....	.....

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NAVAL HYGIENE.

TRENTON.

During the first quarter of 1879, the Trenton remained 70 days in the port of Ville Franche, 10 days at Naples, 6 at Genoa, and 4 at sea. During the second quarter 74 days were spent in port at Genoa, Ville Franche, Marseilles, Barcelona, Gibraltar, Tangiers, Cadiz, and Spithead, and 17 days at sea. In the third quarter 66 days were spent at Spithead, Teruhzen, Antwerp, Flushing, Copenhagen, Gravesend, St. Helen's Roads, Gibraltar, Port Mahon, and Ville Franche, and 26 days at sea. During the fourth quarter, 84 days were spent in the ports of Ville Franche, Gibraltar, and Barcelona, and 8 days at sea. During the entire year this vessel lay in port 310 days, and was at sea 55 days.

ALLIANCE.

During the first quarter 1879 the Alliance was 78 days in port at Smyrna, Ville Franche, Leghorn, and Naples, and 12 days at sea. In the second quarter 21 days were spent at Naples, 15 at Havre, and 35 days in short calls at various ports on the Mediterranean coast, and 20 days at sea. In the third quarter 10 days were spent at Antwerp, 10 at Copenhagen, 36 in short visits at small ports on the coast, and 36 days at sea. In the fourth quarter 16 days were spent at Ville Franche, 2 at Gibraltar, 3 at Madeira, and 21 days in the United States. Fifty days were spent at sea, 39 of which were occupied in the passage from Madeira to Boston. During the entire year this vessel lay in port 247 days, and was at sea 118 days.

QUINNEBAUG.

The first 11 days of the first quarter of 1879 the Quinnebaug was at the navy-yard Norfolk, Va. After leaving Norfolk she visited Gibraltar, Ville Franche, Port Mahon, and Malaga, in all 58 days in port, and 32 at sea. During the second quarter 70 days were passed at Malaga, Gibraltar, Tangier, Algiers, Tunis, Alexandria, Jaffa, Smyrna, and Constantinople, and 21 days at sea. In the third quarter 77 days were spent at Constantinople, Athens, Trieste, Venice, Naples, and Ville Franche, and 15 days at sea. During the fourth quarter 88 days were spent at Ville Franche, Leghorn, Spezzia, and Genoa, and 4 days at sea. During the entire year this vessel was in port 293 days, and at sea 72 days.

The hygienic condition of the vessel is set forth in the following extract from the report of Surgeon D. McMurtrie:

Complement of officers and men, 238; actual number on board 222–238. Cubic air space of berth-deck, 17,561 feet. Number of men sleeping on berth-deck, 172. Cubic air space for each man, 102 feet. Number of men sleeping under top-gallant forecastle, 44. Cubic air space of each forward officer's room, 341 feet. Number of officers in each room, 2 in port, 1 in starboard. Cubic air space of each steerage, 1,28[illegible] feet. Number of officers in steerage, 5 port, 6 starboard. Cubic air space of each: port, 257 feet, starboard, 214 feet. Cubic air space of wardroom, 6,705 feet. Occupants of wardroom, 12 officers and 5 servants. Cubic air space of each state-room, 308 feet. Cubic air space of cabin, 4,150 feet. Sick rate for the year, including every person excused from duty, 3.5 per cent. Daily average of patients, 8.1. Mortality, 0.

Ventilation.—Although this is better in many respects than that of most single-decked vessels of the service, it yet has some grave defects. The cabin has an abundant supply of air from a large skylight, two after and two side gun-ports, and two doors, one

on either side, opening on the spar-deck. The ward-room is well ventilated, having three skylights, one at either end and one in the center, besides an air-port 7½ inches in diameter opening into each room. The steerage also has three hatches of good dimensions which will admit of the adjustment of wind sails in case of necessity. It has morever four air-ports on either side. The berth-deck has only two hatches. Although the deck is clear or "flush" and may be transversed fore and aft, yet the amount of space is too small for the berthing of 172 men. The nine air-ports on either side with their 7½-inch apertures do not meet the requirements. At night, when both watches are below, the atmosphere in this part of the ship becomes very foul, and a windsail cannot correct the evil without too great exposure to those in the immediate vicinity of it. In steaming, this deck is also charged with heated and noxious gases from the fire-room and engine-room. The cubic air space of 102 feet per man is so small that the urgent necessity for its constant renewal is apparent. The substitution of large square air-ports for these now in use is the only remedy I can suggest. The sick-bay is very small, and one cot is all that it can accommodate with any convenience. It has two air-ports, and a hatch 2 by 3 feet through the forecastle and top-gallant forecastle. This hatch also extends below through berth-deck to the yeoman's store-room. It is my opinion that to combine sick-bay and dispensary on port side amidships, and to remove the bulkhead which separates the sick-bay from the berth-deck in its present position, would promote ventilation, add greatly to the comfort of the sick, increase the available "slinging" space of the well, and be in all respects more convenient and suitable for all concerned. The forecastle has a hatch and two large gun-ports on either side for ventilation, besides being open aft. It billets 44 men, but the amount of breathing air space for each individual cannot readily be computed. The fire-room has a large hatch with iron gratings, and four permanent ventilators, two forward and two abaft the smoke-stack. These are not high enough to be of practical use in steaming during the warm months. They should be 2 feet higher, in order to catch any light breezes from forward or over the rail. The same defect exists, in a more marked degree, in regard to the single permanent ventilator communicating with the engine-room. It has a large open hatch directly over the engines it is true, but in the position of the officer of the watch there is only this ventilator to supply air, and it does not extend 3 feet above the deck. To be of practical use it should be at least 10 feet high.

Lighting.—The same hatches and air-ports that admit the atmosphere are also the portals of light. The lighting of the ship is as good as that of any vessel of her class, but it is wholly bad. Under the hatches, amidships, there is usually a sufficiency; but in the portions that are bulkheaded off, as in the state-rooms of officers, where writing is continuous and unremittent (except during the short periods of active duties at drills and quarters) the lighting is altogether insufficient. Defective light has been, indeed, the fault of our ships since we have had a navy. An air-port, which is only 6 inches in diameter when closed, cannot be expected to afford sufficient light in an apartment even so small as those allowed to ward-room and steerage, whether for purposes of reading, writing, or the examination of patients and recruits. This fact and the forced resort to atificial light explain the cause of the premature loss of vision which is so common among the officers in our service. The large rectangular air-ports seem to be the remedy indicated.

Warming.—This is effected satisfactorily by steam radiators distributed throughout the ship.

Water.—Potable; chief source from distillation, though but little difficulty has been experienced in obtaining abundant supplies of good water from the shore. The distillers can furnish about 80 gallons per hour. The tank capacity of the ship is 5,637 gallons.

Food.—The usual Navy ration has been abundant, and upon the whole, satisfactory. In port fresh provisions are issued to the crew two and three times a week.

Clothing.—The ready-made clothing is usually unsatisfactory. The material issued for clothes is of good quality, and well adapted to the service.

ENTERPRISE.

During the first quarter 1879 the Enterprise lay 76 days in the ports of Ville Franche, Leghorn, Naples, Palermo, Port Mahon, Barcelona, and Toulon, and was 14 days at sea. In the second quarter 70 days were passed in ports of Ville Franche, Gibraltar, Havre, Antwerp, Wilhelmshaven, Cuxhaven, and Christiania, and 21 at sea. In the third quarter 16 days were spent at Cronstadt, 19 at Cowes, 6 at Copenhagen, 18 at various small ports on the Mediterranean coast, and 33 at sea. In the fourth quarter 15 days were spent at Ville Franche, 10 at Naples, 14 at Alexandria, 7 at Constantinople, 24 at various small

ports, and 22 at sea. During the entire year this vessel lay in port 397 days and at sea 68 days.

In the sanitary report of Surgeon J. M. Flint, he remarks:

I have only to reiterate that the want of ventilation and light between decks is a serious evil, and capable of remedy. The open seams of the inner planking of the ship's sides, having never been caulked, permit the free passage of the foul air from the bilges into the sleeping apartments of officers and men, and add indefinitely to the other unavoidable sources of foul air, for which there is no adequate means of escape provided, especially when the hatches are closed on account of stormy or cold weather.

With everything except pure, dry air to breathe, our officers and men seem to be liberally provided. Food, water, and clothing are good and abundant, and opportunities for amusement and instruction are numerous. One suggestion in reference to the clothing of the men seems proper; the custom of requiring shirts to be worn low in the neck, especially in the winter season, should be abolished. The under-shirt, at least, should be cut high in the neck, as in the English service. The great frequency of catarrhs and bronchial affections among the men is a fact familiar to every medical officer, and is in part due to this unnecessary exposure of the upper part of the chest.

WYOMING.

During the first quarter 1879 the Wyoming spent 74 days in the ports of Ville Franche, Naples, Palermo, Smyrna, Constantinople, and Alexandria, and 16 days at sea. In the second quarter 66 days were spent in port at Alexandria, Jaffa, Beirut, Piraeus, Ville Franche, Leghorne, Palermo, and Venice, and 25 days at sea. In the third quarter she was 13 days at Trieste, 10 at Piraeus, 11 at Constantinople, and 27 at various small ports on the Mediterranean coast; in all, 61 days in port, and 31 at sea. In the fourth quarter 38 days were spent in port at Ville Franche, 15 at Gibraltar, 16 in various small ports on the French and Spanish coast, and 23 days at sea. During the entire year this vessel was in port 270 days, and at sea 95 days.

GETTYSBURG.

During the first quarter 1879 the Gettysburg was at Ville Franche 16 days, at Genoa 73 days, and 1 day at sea. In the second quarter this vessel was in commission but 36 days, when she was pronounced unseaworthy and sold at Genoa, where she had remained since the 17th day of the first quarter.

DISPATCH.

The Dispatch was on the European Station the first and second quarters of 1879. During the first quarter she lay in port at Constantinople 69 days, at Naples 8, and Genoa 6 days, and was at sea 7 days. In the second quarter, 36 days were spent at Genoa, 3 at Port Mahon, 7 at Gibraltar, 1 at Madeira, 4 at St. George, Bermuda, 3 at Hampton Roads, United States, and 37 at sea. During the two quarters she was in port 137 days, and at sea 44 days.

MEDICAL TOPOGRAPHY AND SANITARY REPORTS OF THE EUROPEAN STATION.

REPORT OF SURGEON D. McMURTRIE.

U. S. S. QUINNEBAUG.

The ports visited during the year are as follows: Norfolk, Va.; Gibraltar; Villefranche, France; Port Mahon, Isle of Minorca; Malaga, Spain; Tangier, Morocco; Algiers, Algeria; Tunis, Tunis; Alexandria, Egypt; Jaffa, Syria; Smyrna and Constantinople, Turkey; Athens, Greece; Trieste, Austria; Venice, Naples, Leghorn, Spezzia, and Genoa, Italy.

The first place, *Norfolk*, is so well known as regards its location, its characteristics, and capabilities that even a passing notice seems superfluous.

Gibraltar has twice been touched at during the year. The town lies at the foot of the northwest side of the rock, and is well built, well paved, and cleanly. Population about 18,000. The prevailing wind is the levanter. Mean temperature, 68°. It being chiefly a garrison town, there is both a naval and a military hospital here—heavy stone buildings two stories high, without particular merit or special convenience.

Villefranche and its beautiful little bay, the headquarters of our squadron, are four miles distant from Nice, and enjoy the same genial and salubrious climate for which the latter is so justly celebrated. In winter it is well sheltered from northerly winds by the Maritime Alps, and during summer the heat is agreeably alleviated by sea breezes. Mean temperature, 60°; annual fall of rain, 26 inches, and chiefly during the months of October and November. The Hospital of Saint Jerome at Villefranche-sur-mer is a small establishment, with two wards and a capacity for about 50 beds. It is under the supervision of the Sisters of Charity, is cleanly and well ventilated, and in several instances in which I have sent patients to this institution I have found the care and attendance excellent.

The Lazzaretto at Villefranche is situated under the brow of a frowning cliff, about half a mile from the village of Villefranche, immediately under the road to Nice. It was founded in 1826, and formerly, under the Italian rule, was the quarantine station for all the ports from Cannes to Mentone. The buildings are large and scrupulously clean, the walls being covered with whitewash. They will accommodate easily 350 patients. There is a very large storehouse for merchandise. In olden times quite a large mole afforded shelter for vessels, but it is now in ruins. The surrounding grounds are quite large, and laid out in avenues lined with orange and lemon trees. There is a quaint old chapel in the center of the grounds, which is rapidly succumbing to time. The only present inhabitants are the sanitary agent and a watchman, and their respective families. A good spring affords an ample water supply to the establishment.

Port Mahon, the capital of Minorca, has 13,000 people. It is quiet and cleanly. The harbor is fine, and the climate is mild. It has a military and a civil hospital.

Malaga has a military hospital and a large civil establishment; also an

institution for the care and treatment of sick foreigners. The climate is dry, but the streets are narrow and uncleanly.

Tangier, where we spent five days, is situated on high land, and overlooks a spacious bay. It is surrounded by a wall, and defended by several forts. The old mole being in ruins, the harbor is greatly exposed to wind and swell, the anchorage is insecure, and the landing difficult. Population of town about 10,000, and trade consists chiefly in provisions for the supply of Gibraltar. The climate of this place is healthy and genial; the heat is less intense than might be expected from its geographical position, and epidemics are of rare occurrence. The thermometer even at the hottest season, except during the prevalence of the hot winds from the desert, seldom rises above 94° Fahr.; the annual fall of rain, which is chiefly confined to October and November, amounts to 29 inches. There is no foreign colony at Tangier except that of the Jews, who are quite numerous, and, by dint of exclusive qualifications, carry on nearly all the mercantile and money transactions. There is a Jewish and a Mussulman hospital at Tangier, but I had no facilities for exploring them.

Algiers is situated on a slope facing the sea. It is strongly walled, crowned by a citadel, and is divided into a native and a foreign portion. The former is very compact, built—with the sole view to defense apparently—on the steepest hillsides, and is permeated by the narrowest and crookedest passageways which serve as streets; these are paved in the roughest and most primitive style, and are not very cleanly. The latter, or foreign portion, is quite the reverse; has wide and regular streets, with imposing buildings, attractive squares and gardens, and has all the appearance of a modern European town. Algiers has suburbs and villas in its environs of great beauty. The climate is generally temperate and healthy, but the heat is often excessive under the influence of the hot wind from the desert. From April to October the sky is serene; the winter is mild and marked by abundant rains. The mean temperature of winter is from 50° to 65°, and of summer, 74° to 104° Fahr., but the elevated temperature is constantly modified by sea breezes. The most pernicious influence, however, is that of the simoom, which fills the air with a fine impalpable powder, and renders breathing most difficult to persons in health, and very distressing to a large class of invalids who are in the habit of resorting thither. So light is this dust, and so strong are the winds, that deposits sufficient to discolor the snows of the Alps are sometimes found upon their peaks and traced to this source. Prostitution is very common among the Moorish population, and the women are required to have their licenses certified once a week after inspection, but the scores of females that throng the office of the inspector, and the amount of labor thus entailed, preclude the possibility of any thoroughness of examination.

Tunis, situated on the west side of a lagoon at the mouth of the river Mejerda, has a population of 150,000. Its streets are narrow and dirty, and the houses in general exceedingly mean, consisting of a single story without windows towards the streets. It has a Moorish college and numerous public baths. The climate is healthy. Rain falls at intervals between November and April. Mean annual temperature 68°.

Alexandria has a population of about 150,000, and its streets are narrow and uncleanly. Climate is hot and damp. Late observations give thirteen days of rain in Lower Egypt during the year. The prevalent winds are from the north, and continue from May to September, and from November to February. At intervals during the spring, for about fifty days, Egypt is liable to the terrible wind of the desert—the

simoom—which, from its intense heat and dryness, threatens, when long continued, almost the extinction of animal life. Fortunately it seldom lasts above three days. The heat of the climate, combined with the filthy habits of the people, is considered favorable to the ravages of the plague. Nearly all the children seem to be the victims of severe and chronic ophthalmia.

Jaffa, Palestine, is a small town of about 5,000 Turks, Jews, and Christians. It stands on an eminence in form of a sugar loaf. Its land side is surrounded by orchards, while its front dips into the Mediterranean. Although Jaffa looks well from a distance, it is a labyrinth of dirty blind alleys and dilapidated lanes and streets. The climate is dry and warm.

Smyrna stands upon a plain which slopes gently down to the bay. From the water its appearance is rather picturesque on account of its domes and cypresses. But its streets are badly laid out, narrow, gloomy, and unclean. The houses are built mostly of wood, and are very miserable in appearance. The town is divided into separate quarters, each inhabited by a distinct race. The climate is hot and unhealthy, and the plague sometimes commits great ravages. There is an English hospital at Smyrna, and numerous public baths.

Constantinople, with its suburbs, is said to contain nearly a million inhabitants. Of this number more than one-half are Mussulmans; the remainder an odd conglomerate of Greeks, Armenians, Levantines, Franks, and Jews, interspersed with Circassians, Persians, Arabs, Hindoos, etc. The city is built upon a series of hills which rise progressively from the water, one above the other, and each crowned by some noble and conspicuous edifice. But the favorable impression made by this picturesque amphitheater, beset with villas and gardens, vanishes at the first glimpse that the stranger obtains of the interior of the city.

The streets are narrow, intricate, and filthy, the houses mean, and the atmosphere is filled with offensive odors. The streets, too, are ill-paved, and are not lighted at night. As the houses are built mostly of wood, extensive conflagrations are frequent. The sewerage is bad, and the only scavengers seem to be the rains in winter, and the thousands of homeless dogs in summer. There is almost an entire absence of public squares. As in Smyrna, the different nationalities live in separate districts, of which the Turkish is the most extensive, and the most dilapidated. Among the charitable institutions the soup-houses stand prominent, in which many thousands are daily fed. There are 200 hospitals in Constantinople, and, in some of them at least, Christians are provided for. There are besides in Pera, an English, a French, a German, and an Italian hospital, and in Galata an Austrian and an English marine hospital. Constantinople has 2,000 public baths. As Mohammed made ablution a part of religion, his followers, therefore, feel it incumbent upon them to endow bathing establishments for the good of the public. These institutions being charitable, no fixed price is demanded, and it is left to the option of the bather to contribute what he chooses to the current expenses. Hence, at a trifling cost, this luxurious necessity is within the reach of every citizen. The Turks are not an unhealthy race, and are free from many of the maladies common to other countries. Gout and rheumatism and affections of the liver and kidneys are uncommon. The hammams in Constantinople are open at dawn, and, as the habit of early rising prevails, they are thronged by those who seek their benefits. This universal custom is, I think, no small factor in securing immunity from disease.

Athens.—From the ancient port of Munychia, where we lay, to Athens

is a distance of four miles, and the journey is performed by rail. With the ancient capital of Greece and her fame and splendor I have nothing to do in this paper. The modern city is small but well built on a sandy plain about a mile from the Acropolis, but does not encircle it, as did the old. Its population is about 50,000. Its aspect is somewhat bizarre: European shops elbow Eastern bazaars; a Christian chapel is *vis a vis* to a Turkish mosque; an ancient Grecian portico opens on a modern residence, and so on. The climate is warm and generally healthy. Mean temperature, 65°. The winters are confined to the first two months of the year. Both spring and autumn are rainy seasons; but throughout the whole summer, which may be said to comprise half the year, a shower or a cloud is rare. There is a department of medicine in the university of Athens which is said to be well attended.

Trieste consists of an old and a new town. The former occupies the southern elevated portion on the slopes of the hill, and has steep and zigzag, narrow, and dirty streets; the latter, separated from the former by a broad avenue, has wide and straight streets, and is built with neatness and regularity. The climate is variable and subject to sudden changes, owing to the alternate prevalence of the hot and oppressive sirocco and the cold and cutting bora, but in the winter and spring it is oftenest calm. The hospitals of Trieste present nothing noteworthy either in construction or management. Sanitary inspections of prostitutes are required at this place, but my observations indicate that they are very inefficiently conducted.

Venice has 120,000 people, and presents the appearance of a city half submerged in the sea. The only open land spaces are the Meruria and the Piazza of St. Mark. Nearly all the houses have a water and a land entrance, but, notwithstanding the universal prevalence of water in and about the buildings of Venice, the houses do not seem to suffer from dampness. This is because the foundations are of solid stone and incapable of absorbing the moist element. The anomalous situation of the city does not seem to engender any special organic lesions among its inhabitants, nor to foster to any remarkable degree any special class of diseases. The general civil hospital is a large establishment in the central part of the city. It is composed of a group of buildings used previously for some other purpose. It contains 1,800 beds, and averaged 900 patients daily during the past year. It is under municipal control. There is no separate ward for contagious or infectious diseases.

Naples.—Population about 500,000. Situated on the bay of the same name, and built upon the declivity of the hill and along the shelving coasts in form of an amphitheater. The streets, though in general narrow, are tolerably straight, and handsomely paved with large flags of lava. They are also clean, the filth being carried off by large subterranean sewers, but many of them are dark and gloomy from their narrowness and the height of the buildings. Naples has a number of squares, and some of them are quite spacious. The inhabitants are ignorant and superstitious, and the lazzaroni, who are without dwellings or occupation, are said to number 20 per cent. of the entire population. Prevalent diseases are phthisis, rheumatism, malarial fevers, and ophthalmia. Naples is not sheltered from the winds upon any side. The mistral and the sirocco may be expected to alternate with monotonous regularity. Mean annual temperature, 60°. The hospitals number upwards of twenty, and several are large, well-ordered establishments.

Leghorn is in general, a neat, clean, well built place. The adjacent country is low and flat, and often marshy. It has a damp climate, and is subject to keen winds. Its mean annual temperature is about 62°.

The civil hospital of Leghorn is situated near the Corso Vittoria Emanuelle, and also in close proximity to the marina. It is a large brick building, covered with rough cast, and from the outside view one would judge that it had lasted many centuries. It contains 450 beds, although at present they have not more than 350 patients. The wards are divided into medical and surgical—male and female. Each of these wards contains about 50 beds. They have also a special ward for ophthalmic cases, which, according to very ancient usage, is kept in almost perfect darkness by numerous dirty curtains. The hospital has also quite a number of cases of insanity. One of the peculiar features of the institution is that they send all the venereal cases of any severity—and they have large numbers—to Pisa, as, according to their charter, they are not allowed to treat them here. This is due to the fact that part of the endowment is given by the church. The bedsteads are all of iron, and the bed linen is quite clean and of ample quantity. The ceilings are very high, and the windows extend down almost to the floor, so that in temperate weather the ventilation is quite fair, but in cold weather the atmosphere must become impregnated with all the foul air necessarily generated in so large a ward, where they have no other means of ventilation than windows, which are necessarily closed. No meteorological observations are taken in the hospital, nor do they publish any statistics of their cases. The principal diseases which occur here are typhus, typhoid, and malarial fevers; typhus being very rare, and the malarial fevers being chiefly imported from the adjacent marshy country in the months of May and September. These malarial fevers have the same type and general semiology as the Roman paludal fevers. The typhoid fever follows the general course of our enteric fevers. Rheumatism is very prevalent here in the fall and winter months. Consumption and pulmonary affections are very prevalent. Tuberculosis in its various forms has its usual place in the death-rates. Small-pox is *said* to be comparatively rare, and diphtheria still more so. Renal affections are also extremely rare in comparison with the number that we would find in so large a hospital in America. Dyspepsia and alimentary affections are quite common. Leprosy in its varied forms is unknown here, except a few cases imported from the East.

The surgical wards present but few cases of interest; one amputation at knee for sarcoma, and two compound fractures. The fractures were both dressed with very nicely adjusted plaster of Paris bandages, which were put on the second week after injury. The amputation was dressed after the method of Lister. One case of bullet wound of shoulder completed the men's surgical ward. In the women's, beyond a case of fracture of the clavicle, there was nothing of interest. The ward floors are of wood and not extraordinarily clean, being washed only once a week, and the whole hospital being generally washed only six times a year. The cooking for the wards was done in close proximity to the latrines, which were in a filthy state, so much so that the interne refused to have them inspected. The walls and ceilings are plastered and painted except in the upper story, where the roof is of wood and has a decided pitch. The drainage is carried by means of conduits to the center of a court-yard where there is a large cistern emptied by covered carts, which take the sewage matter to the country, to be used as a fertilizer. The hospital medical staff consists of 6 surgeons, 12 medical men, and 5 internes, one of whom makes a specialty of the eye and the ear.

The hospital has a handsome annual income from its endowment, and also receives an income from the government and the church. There is

a small ward, containing about a dozen beds, for pay patients, which is much cleaner, better ventilated and lighted than the other wards. This is usually devoted to foreign sailors, principally American and English. The terms are about three francs per day. The instruments of the hospital are quite poor, and are decidedly antique, except a trephine which is turned by a lever and a series of ratchet wheels, and a conical trephine.

Spezzia has only about 10,000 people. It still enjoys some of its ancient reputation as a bathing place and summer resort.

Genoa is built around, but principally on the east side of its port, which is semicircular, the chord being about one mile in length. The land on which the city is built rises amphitheater-wise round the water's edge to a height of from five to six hundred feet, so that its aspect from the sea is strikingly grand and imposing. At a distance of ten or twelve miles in the rear, tower the Appenines, frequently snow-clad. From these mountains the bleakest winds come sweeping down upon city and bay during the winter months with the most perfect daily regularity, and the most direful results to invalid and stranger. These bleak winds are favorable to the spread of epidemics during the winter, for the houses are closely built, and the greatest care is taken to prevent ingress or outlet of air. Moreover, there is little or no ventilation caused by heating apparatus, for the houses are almost destitute of fire-places and chimneys, and Italians in general are very economical of fuel.

We arrived at Genoa in the winter, and after a visit of a fortnight, from Monday, November 24, to Tuesday, December 9, we left for the mild adjacent port of Villefranche. On Saturday, December 13, one of the cadet-midshipmen, who had been daily ashore in Genoa, but who had *not* been ashore after, was seized with acute symptoms pointing to varicella or variola. A few days later there were three more cases in the steerage of the same nature. They were all mild, but in the first the eruption was most profuse. The first was diagnosed as an infectious disease on the 18th, and sent ashore to Villefranche on same day, to private quarters. On the 31st of December, the other three officers were sent to the military hospital at Nice, after which the steerage was broken out and fumigated. As much of the bedding as had been used by the patients was taken out and sunk in the harbor. The steerage officers who continued in health were sent ashore, to the Lazzaretto, and the ship's company was promptly vaccinated. Up to this date, January 21, no farther cases of a suspicious nature have occurred on board or at Lazzaretto. But the information has reached us from undoubted source that confluent small-pox is epidemic at Genoa. Hence, there can be but little doubt of the nature of the disorder with which we have had to contend.

I herewith append some notes on the Protestant Hospital, the one visited at Genoa. This hospital was established by the foreign colony in Genoa, the principal subscribers being English, German, and Swiss. It has in all about 28 beds, and is kept in excellent order by the matron. The attending physician is Dr. Breiting, a Swiss, who speaks excellent English. The wards of this institution are scrupulously clean and well ventilated. Each bed is furnished with an electric bell. The convalescent ward is a fine, airy, cheerful room, and is principally used for smoking-room. There is a large garden attached, in which the convalescents are allowed to promenade in summer time. Most of the rooms are whitewashed. The latrines are thoroughly disinfected with chloride of lime, and the drainage of the hospital is excellent; all the refuse matter

being flushed into a large pipe which connects with a sewer discharging into the sea. The principal patients are foreign sailors, who pay three francs per day for medical attendance, board, and washing. There are two private rooms, for which they ask ten francs per day, which are well furnished and thoroughly comfortable.

REPORT OF SURGEON J. M. FLINT.

U. S. S. ALLIANCE.

WILHELMSHAVEN.

This is a new naval station of Germany, which is rapidly growing in importance. The hospital connected with it is comparatively new, but presents no points of special interest. Barracks are provided for the patients during the summer, and all are removed from the main building. Medical supplies for the ships in ordinary as well as those fitting out, are kept in readiness at the hospital. They are liberal and well selected. A very complete and convenient knapsack, to be carried by an attendant, containing medical and surgical appliances for a landing party, is furnished to every ship. A surgical table forms part of the outfit, which for simplicity, convenience, and economy could hardly be excelled. It is made of one and one-half inch deal boards. The frame is hinged at the corners, the hinges being placed alternately on the inner and outer side of the frame, so that it may be folded perfectly flat without being taken apart. The top is a single board, with two cleats on the under side at the proper distance from the ends to fit snugly into the frame when open; so that to set up the table is but the work of a moment. When folded it may be stowed between the beams overhead, or in other suitable place in the sick-bay, and is always ready for use when wanted in any part of the ship.

CRONSTADT.

The military hospital at Cronstadt is an immense brick building, three stories in height, constructed forty years ago, and capable of accommodating 2,000 or more patients. Average number of patients, 1,200. It is under the direction of Dr. Shwenck, who holds the military rank of general and has complete control of the establishment in all its departments. The building is entirely antiquated, having no provision whatever for ventilation, except by the doors and windows. The wards are large, furnishing liberal space for each man; the beds arranged in the middle of the wards instead of against the wall as is the usual custom, thereby avoiding cold draughts of air from the windows and radiation from the walls. The whole establishment is scrupulously clean. Diseases of every character are received and treated in the hospital, but there is no separate building for contagious diseases, nor for the insane. There are three or four barracks in the grounds, to which cases of erysipelas, ulcers, etc., are removed during the mild weather of the short summer. The diet seemed to be liberal, and, from personal observation, can be said to be excellent in quality and well prepared. Scurvy is a frequent disease, but the subjects come from the army rather than from the navy, and more especially from the artillery branch of the service. Defective sanitary arrangements of the barracks was assigned as a cause. Syphilis furnishes but a small percentage of patients, prostitution being under strict police supervision.

NAPLES.

The largest city in Italy. Population, December 31, 1878, 458,614. Climate, comparatively mild. Extremes of temperature, 27° to 104° Fahr. The temperature changes rapidly, accompanying changes in the direction of the wind.

Water supply is entirely inadequate to the sanitary necessities of a large city. A small quantity and of good quality, furnished to a few houses only, is brought from Caserta, 20 miles distant. The rest is supplied from cisterns, springs, and wells in the midst of the town. The sewerage is bad. Where sewers exist they have free openings to the street, and from the scarcity of water are not properly flushed, except during heavy rains. They discharge into the bay, near the shore, and, there being no tide to carry away their contents, offensive emanations are inevitable. Water-closets, where such are found, connect directly with the drains, without intervening traps. Very few of the modern kind exist, even in the best houses, and they are ineffective from want of water.

Prevailing diseases.—Mortality tables show a very large percentage of pulmonary diseases. The class next in fatality is entitled "gastro-enteric." Epidemics of the severer forms have not been very frequent. The latest was of cholera, in 1872. There is much in the unhygienic condition of the city, and in the mode of life of the people, to favor the spread of any epidemic when once introduced. Prostitution is under the surveillance of the police, but venereal diseases prevail extensively.

Statistics show a high death-rate, as compared with other large cities. As compiled from tables from January to October, 1879, the mean annual rate was 31.5 per 1,000 of population, while Paris gives 26.5, and London 23.3.

Hospitals are numerous, some of them very extensive. The International Hospital, recently established, supported principally by subscriptions from the foreign residents of Naples, and having English-speaking attendants, seems the most desirable one to which to send the sick of our ships when hospital treatment is necessary.

MESSINA.

Messina is well situated and has a fine climate, except for the occasional prevalence of the "sirocco," a southerly wind, very dry, depressing to the nervous system and irritating to the nasal and bronchial membranes.

Water supply is very defective, being brought to the city by an aqueduct and distributed by public fountains, from which families obtain their naturally limited supply, in jars and casks. The water is saturated with lime.

Little attention is paid to sewerage, and no advantage can be expected from drains, in free communication with the street, depending entirely upon the rainfall for their purification. The water-closets, where such exist in the dwellings, are sources of great danger, being simple tubes leading to the drains, without siphons or other arrangements to prevent escape of gases, and without water to flush them out. As might be expected, the greatest mortality is from gastro-intestinal diseases. Statistics for the year 1879, from January 1 to September 1, show a mean annual mortality of 30.5 per 1,000 of population. No serious epidemics have occurred recently. Quarantine regulations are the same as elsewhere in Italy. There are two hospitals—a civil and a military.

Throughout Italy the habits and mode of life of the people, in cities and in villages too well known to need description, as well as the miasmatic character of a large portion of the country, render the sanitary condition very unfavorable.

TRIPOLI, BARBARY.

A small, unattractive, dirty, oriental city, where every principle of sanitary law is violated. Estimated population, 20,000. Water supply from cisterns and wells. At the time of our visit the cisterns were all dry, and the water was drawn from wells in the filthy town. No attempt at sewerage, except in a few of the houses on the street next the sea, occupied by foreigners. Water-closets are placed over pits in the earth, which are said to be emptied about every two years. The streets seem to be used very generally in their stead. Ophthalmia is almost universal among the children. Small-pox prevailed at the time of our visit, November 6 and 7. Deaths from that cause, 20 to 30 per week. Vaccination not commonly practiced.

No mortality statistics available. No hospitals, worthy of the name, exist. Altogether the town seems to offer every facility for the generation and perpetuation of epidemic disease.

BEIRÛT, SYRIA,

A city of about 80,000 inhabitants, is well situated upon a rocky promontory, sufficiently precipitous to furnish good natural drainage.

The climate, in winter, is mild, in summer, warm, but not oppressive.

Mean temperature and average number of rainy days are as follows: January, 57° Fahr.; 11 days of rain. February, 58°; 11 days. March, 63°; 9 days. April, 66°; 5 days. May, 73°; 2 days. June, 77°; 1 day. July, 82°; 0 day; August, 83°; 1 day. September, 81°; 1 day. October, 78°; 3 days. November, 66°; 7 days. December, 61°; 12 days.

The water supply is abundant and good, having recently been introduced from a river a few miles out of town. For sewerage the people rely, almost entirely, on the unaided provisions of nature. Garbage is thrown out in front of the houses, and the only scavengers visible are the dogs. There are no enforced sanitary regulations. The prevailing diseases are gastro-intestinal. Dyspepsia is very general among the common people, owing in great measure to an unvarying vegetable diet. No statistics of disease or mortality available.

As in other oriental cities, all the conditions necessary to the rapid spread of any epidemic are present.

The city is fortunate in the possession of an excellent hospital, built and supported by the Prussian Order of St. John. The medical service is administered by the physicians of the American mission. The nurses are deaconesses of Kaiserswerth. The building is new, well supplied, and in good condition. There are 60 beds in the general ward, and several handsome private rooms.

The American mission has established here a college and a medical school for the education of the native youth. Fine buildings have been erected, and both schools are flourishing. The instruction in the medical school is in Arabic, though a preliminary knowledge of English and French is required of the students. Much zeal and labor, on the part of the instructors, is shown by the translation of such works as Gray's Anatomy and Kuss's Physiology into the Arabic. A daily clinic, largely

attended, and access to the hospital mentioned, furnish all needed practical instruction. The intelligent appearance and sustained interest manifested by the students were remarked. Too much credit cannot be given to the men who have created and who conduct so excellent an institution. Its beneficial influence is certain to be felt through the whole country.

REPORT OF SURGEON F. L. DU BOIS.

U. S. S. WYOMING.

VILLEFRANCHE, FRANCE.

The beginning of the year found us at Villefranche Sur-Mer, a small town of France, 3,000 inhabitants, and near the Italian border. The town is more Italian than French; is built on a steep hillside, and is well protected from the north winds by the Maritime Alps, spurs of which rise behind it. The houses are closely packed together, the streets narrow and usually clean. On our arrival we learned that smallpox had been prevailing to some extent, in consequence of which we had but little communication with the port. We learned afterwards that in Nice (near by) the disease was far worse, but the authorities, fearing to injure the prosperity of that city during "the season," managed to keep this information from strangers. We vaccinated all hands. During the few weeks we spent here the weather was bad, cloudy, rainy, damp, and cold, and so it continued during the winter; the same, of course, being true of Nice, which is the popular winter resort of France, so that it can only be considered a trying climate for invalids. We were told, however, "that such a winter was very exceptional." There is a hospital here to which our sailors can be sent for 3.50 francs per diem.

NAPLES.

We arrived at Naples January 16, and remained a few days. The reputation of the sanitary condition of this city is bad. In the winter, it is rainy and cold. In the spring, pleasant winds prevail, the city is far more healthy, and this is the best time to visit it. A general observation showed much filth, bad odors, dirty habits. Malaria is said to hang over the city during most of the year. The average rainfall, taken for the past twenty years, is 750 millimeters. "See Naples and die," has more truth than poetry for its origin.

SMYRNA, ASIA MINOR.

January 30 we arrived at Smyrna. This is a city of 150,000 inhabitants, and its foundation is lost in antiquity. It is located near a fertile plain, with mountains rising behind it, and on all sides of the vast bay which opens before it. This is a fair sample of the better class of Turkish cities—streets narrow and filthy, miserably paved, and badly drained. Foul odors, of infinite variety, prevail, each worse than the preceding. The city is divided into quarters for different nationalities—Franks, Armenians, Greeks, Turks, and Jews. The first is dirty, and the filth increases in arithmetical progression in the order above named.

In winter the health of the city is considered good, in summer the reverse, and all the residents who have the means remove to the coun-

try. The plague has not visited this port for many years. The neighboring plains have a bad reputation for deadly malaria. The English Government supports a hospital here, which is well spoken of, and to which our sailors can be sent.

CONSTANTINOPLE.

The ship has visited Constantinople twice during the year, viz, in March and August. On the first occasion we found it highly disagreeable, from cold winds, rain, and filthy, muddy streets, and we left it, March 14, in a snow-storm. In August all this was reversed; while the other cities of the Mediterranean were parched with heat, strong breezes sweeping down the Bosporus, kept the city cool, drove out its vile odors, and gave health and animation even to the dogs and beggars which swarm the streets. Like all Eastern cities, the different nationalities occupy separate quarters of the city or suburbs. Constantinople proper contains mostly Turks, and is the dirtiest quarter, and its streets the crookedest. The houses are of wood, and very dilapidated. Para is the residence of Franks and ambassadors. Considering the length of time foreigners have occupied this quarter, one is constantly astonished at its narrow and ill-paved streets and its want of cleanliness. It is an improvement on the other quarters, and particularly in that the houses are of brick instead of wood. Galata is the commercial center, and its narrow streets are thronged with carts, porters carrying immense loads on their backs or suspended on poles, the ends of which rest on their shoulders. Two marine hospitals are located in this quarter.

The facilities for draining these cities are the best in the world. A rapidly-flowing sea washes their shores, from which the land rises by a steep ascent. Notwithstanding this the sewage is bad, and in many fine houses in the best quarter one is met at the threshold by odors suggestive of typhus, plague, and small-pox. Occasionally epidemics of these diseases sweep the city, and the number of deaths no one knows. On the other hand, for many seasons the health of the city will remain good. Statistics of mortality, as far as we could learn, were not kept, or at any rate could not be obtained. Refugees from the late war were dying in crowds, and the Sublime Port considered this as "the will of God" and the best means of getting rid of a necessary evil.

After a short residence here one is led to believe that the city is saved from constant scourging by plague, etc., by four things: 1st, the dogs, which have the main contract as scavengers; 2d, the high winds which in summer blow daily, generally from the north and northeast; 3d, the rains which wash the streets; and, 4th, the Bosporus, which carries off their accumulated nastiness by its rapid current.

Approaching Constantinople from the Mediterranean, vessels stop at Chenak, 120 miles distant, for pratique, which is shown at the health office on reaching the city. Coming from the Black Sea, Anatolia Kavak is the stopping place for the same purpose.

ALEXANDRIA, EGYPT.

We arrived at Alexandria March 16. The plague was thought to exist somewhere in Russia, and as we had been in Constantinople, a quarantine of seven days was considered requisite to purge us from infection, as in Spanish and Italian ports they quarantine vessels from New York because yellow fever exists in New Orleans or Memphis.

Alexandria to a large extent is European, has wide and well-paved

streets, large and handsome stone houses. The native quarter is like those of other eastern cities. On landing in Egypt, a stranger is first struck by the astonishing number of diseased eyes. All the native children, and a large proportion of the adults, are thus afflicted. Ophthalmia, cataract, staphyloma, stillicidium, symblepharon, total loss of one or both eyes, are sights met with at every turn. These are made more disgusting from the flies which feed upon the diseased surfaces. It would seem as if, of the plagues sent upon Egypt, this of flies had remained. The natives care little for them, scarcely ever brushing them away. The eyes of the children are often concealed by the mass of flies collected over them, and one can see beggars asleep in the streets, with not only their eyes covered, but also their open mouths filled with flies. An intelligent surgeon, of many years' experience and practice in this country, told me he did not believe these flies had any connection with the spread of the disease, but attributed it to poverty of blood, filthy habits, glare from the white soil, and the winds which fill the atmosphere with dust. The natives also suffer greatly from diseases of the

privates—hydrocele, fissures and fistulas, being very common. Elephantiasis is frequently met with. I append a sketch of this disease, affecting the scrotum. It was successfully removed by Dr. Mackey, of the German hospital.

LEGHORN, ITALY.

We visited Leghorn in May. This city of 97,000 inhabitants lies on the sea-shore, in the valley of Pisa, watered by the Arno and Sesectrio. This plain contains many swamps and canals. To the eastward is a plain of higher altitudes, where many country seats are located. The neighboring mountains contain much marble and granite. On the sum-

mit of one of these hills is a large natural basin of sulphur water, and near the city wells rich in magnesian salts are found.

The climate is mild, ranking next after that of Naples and Palermo. The mean winter temperature is 48° Fahr. The mean for the year 1878 was 58° Fahr. August, the hottest month of the year, in 1878, showed a maximum of 86° Fahr. In January, the coldest month, the minimum of 1878 was 40° Fahr. Relative humidity for same year, 70.9 millimeters. In summer there is little rain, but the nights are damp. Rainfall, 1878, was 34.8 inches, and the number of rainy days 90. Prevailing winds are east-northeast, northeast and west. Good potable water is furnished the city by aqueduct, built in 1792. The source of the supply is Colognoli, five miles distant from the city. The drainage is excellent, and has remedied the natural insalubrity of the place. The sanitary measures used by the authorities are the daily careful cleansing of the streets, watering the same in dry weather, examination of water-closets, and in time of epidemics, disinfection of houses and isolation of sick.

Hospitals.—Three in number—a civil, a military, and a Jewish. Our sailors can be admitted to the first for 2.50 francs a day. They are all moderately well conducted.

The mortality for 1878 was 27.04 per 1,000. May is the most healthy, December the most sickly month of the year. The diseases which prevail are typhoid fever, bronchitis, pneumonia, tuberculosis. The city is considered very healthy, being rarely visited by epidemics of any kind, and during the summer months is a watering place for the inhabitants of Rome, Florence, etc.

TRIESTE, AUSTRIA.

The civil hospital of Trieste is a large establishment, capable of accommodating 1,000 patients, and having 800 at the time of my visit. It is clean, free from bad odors, and has every facility for properly conducting such an establishment within its own walls. Some of the wards are overcrowded.

BLACK SEA.

In August we made the entire circuit of the Black Sea, stopping at most of the ports of the south and north shores. We remained but a few hours in each, and of course had not time to gather reliable information. It can be stated as a general fact that most of the towns of the southern shore are malarious, particularly so Sukumkali, which is built on a badly-drained swamp. Malarial symptoms were presented by many of the officers and crew during and subsequent to our cruise on this southern coast, though none of serious character. The ports of the northern shore had a better reputation for salubrity.

We made flying visits to Tripoli, Girgenti, Marsala, Cagliari, Palma, Barcelona, and other cities of Spain, Tangiers, Marseilles, but no items of interest were collected.

ALGIERS.

November found us anchored in the bay of Algiers. The city is well built, houses of stone, streets narrow, in many of them the upper stories of the opposite houses meeting, so that the street becomes merely a tunnel. As far as my observation went, the streets were clean.

The prevailing diseases are typhoid and malarial fevers. Epidemics are rare. There are two hospitals, one civil, called Mustapha, which charges 1.60 to 2.50 francs per diem; the other military, called Dey. This

is the better of the two, and its charges are 1.50 francs. I understood our sailors would be received at either.

Charitable institutions.—An asylum for the poor, and one for aged men, both under care of Sisters of Charity; 2d, *Bureau de bienfaisance.* Here medicines, soups, and food are furnished the poor; 3d, *Dépôt de mendicité*, or workhouse for beggars and tramps.

Medical schools.—1st. A school of pharmacy. 2d. A regular school of medicine.

Water.—An old Roman aqueduct conducts water to the city from the mountains. The houses, as a rule, are not connected with this supply, but public fountains are open in the streets. Water carriers draw from these into copper jars, each holding about four gallons, and thus supply the city. The average price for this amount is two cents.

Climate, tropical; two seasons, wet and dry. Atmosphere is warm, humid, and bright, and almost constantly in motion. The air is less dense than on the northern shores of the Mediterranean. According to MacCarty, geographical engineer, the wet season, from November to April, has a mean temperature of 14°. 5 C., maximum +21°, minimum +8°; the dry season, May to October has a mean +22° C., maximum +30°, minimum +15°; mean for the whole year 20°6 C. Algiers is a winter resort for invalids, particularly those affected with pulmonary and rheumatic troubles.

"The Bureau of the Society of Climatology of Algiers" has received reports from one hundred and three civil and military physicians upon the climate and health of Algeria, and particularly in relation to tuberculosis. The result of their investigations shows Algeria to have a mortality from phthisis "one-half that of three or four points the most favored of the globe" (by the globe, they doubtless mean Europe and Africa) and "one-fifth that of Europe in general." The conclusions arrived at from these various reports are thus summed up:

1st. The climate of Algeria resists the generation and development of tubercles.

2d. Phthisis is rare among the natives, but when it does exist, is grave, from their bad habits and from frequent complication with syphilis.

3d. Tuberculous patients, if not cured, have their lives prolonged by a residence in Algeria.

4th. Immunity is acquired for the children of tuberculous parents after a sojourn here.

On some points there is naturally a difference of opinion. Some attribute aggravating qualities to the west and northwest winds and others to the sirocco. The opinion is pretty general that high elevation accelerates the march of the disease.

After the above summing up, Dr. Feuillet, in "La phthisie en Algerie," asks "to what are we to attribute this immunity?" He believes that it cannot be due to uniformity of climate, as great and sudden variations of temperature are frequent, nor to elevated temperature, as many places where this is as high, and higher, as Malta, Naples, Gibraltar, &c., are notoriously favorable to the development of phthisis; 3d, geological formation, for the same reason; 4th, influence of sea-air—the testimony on this point of various authors is so contradictory that it must remain in doubt; 5th, altitude also doubtful; 6th, latitude, ditto; 7th, humidity—the testimony here too is vague; 8th, malaria, and here the author seems to think he may have found the solution. He says phthisis is rare in the malarious districts, that one well acquainted with the medical topography of the country will note that where malaria is found in the greatest extent phthisis is rarest. It is also a noted fact that a residence

in malarial localities is useful in tuberculosis. He suggests that the depletion caused by the sweating stage of malarial fevers may be one of the means by which the tuberculous diathesis is eliminated.

Phthisis is more frequent in the city of Algiers than in the towns and villages of the interior; more common among the Jews and Spaniards than the Arabs. It has increased among the Moors on account of the misery into which this race, by reason of its overthrow, has fallen. An official document, "L'état actuel de l'Algerie," gives the mortality of the French army of 64,240 men as 518 in 1863. The same document would indicate the rapid disappearance of the Mussulman, as in the same year there was an excess of deaths over births of 2,396.

MALAGA, SPAIN.

November 13 we arrived at Malaga, and remained five days. This is a city of 120,000 inhabitants, closely built, with narrow and dirty streets. Sewerage bad. The modern houses are connected with the public drains, the old ones are not.

The laboring class live upon bread, beans, rice, and rarely fish. Still more rarely can they afford to eat meat. Fruit in season is cheap.

Water of excellent quality has been supplied the city for the last few years by aqueduct from the Torremolinos River, four miles distant.

The city has a good reputation for salubrity, and is a winter resort for invalids, particularly those with pulmonary troubles. Small-pox exists here almost constantly. While we were there it prevailed, but was not epidemic. Typhoid fever, diarrhœa, and occasionally typhus are found. Malarial diseases are conspicuous by their absence, being very rare in the city or its environs. Prevailing winds are: 1st, Easterly, which are damp and disagreeable; 2d, West-southwest; 3d, North wind, which is dry and corresponds to the sirocco. The wind never blows from the south. Mean temperature for the month of November was 18°.14 C.

There are three hospitals, a military, a civil (city), and one "Hospital Noble," founded by a benevolent Englishman; also one for aged people.

There are several charitable institutions, one for education of destitute children, two orphan asylums, one house of correction, one general asylum, and soup-house for mendicants.

The quarantine station for this and all Spanish ports on the Mediterranean is Port Mahon, 445 miles distant, a regulation most destructive to commerce, as sailing-vessels often thereby have their voyage prolonged for many weeks, having first to stop at their port of destination; then, if for any reason the ship has to be quarantined, this additional voyage to and from Port Mahon becomes necessary.

CADIZ, SPAIN.

We spent six days of November and December in Cadiz. The weather was of the worst, constant gales and frequent rains. The city claims 65,000 inhabtaints, is well built, and has a clean aspect.

The sewerage is bad, the sewers being small, old, easily choked, and seldom repaired. The emanations therefrom, particularly in summer, are very offensive, and sufficient to blacken all the silver-ware in the houses. This is increased by high tides, which block up the mouths of the sewers. In winter, being so frequently and thoroughly flooded by rains, this nuisance is less.

The prevailing winds are from the south and southwest. These are

very moist, and hence the climate may be called humid. The east wind is dry, and, though disagreeable, is considered healthy and the salvation of the city.

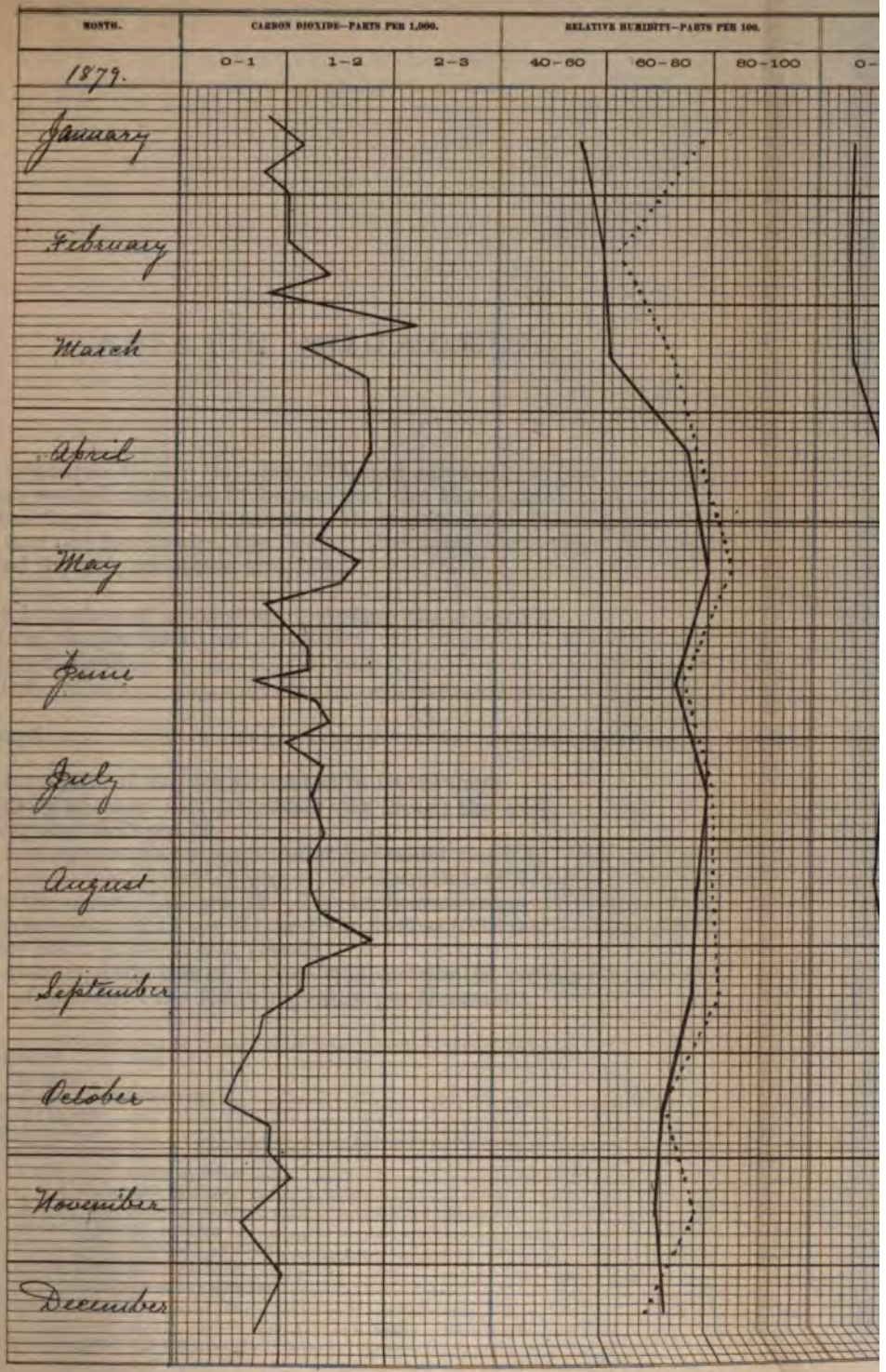
There is a civil and a military hospital under one roof, but distinct; a private one, "San Juan de Dios," to which our sailors can be sent for 50 cents a day. The accommodations and service are said to be good. Rigorous rules in religious matters make a sojourn in these hospitals irksome to Protestants, as they are under complete control of Sisters of Charity. There is an orphan and a general asylum, also a foundling hospital where little responsibilities can be hung up at the door in a basket, without the authors thereof being known. Owing to the great license allowed all classes in carnival, this institution is well patronized even by the highest circles. Those who are *au fait* with the working of the establishment, attach to their infants a ribbon cut in some peculiar way. The "Sisters" carefully keep this, and if at any time the parents wish to claim the offspring they present the other piece of the ribbon, and if it corresponds the child is given up.

The city depends upon the heavens for its chief supply of water, each house having a large cistern in its court-yard. If it be true, as is said, that there is a marked absence of typhoid fever, this may be one of the principal causes. This supply is not always sufficient, and to furnish water during a scarcity, an English company built an aqueduct ten years ago. The source was thirty miles distant, and the water is hard and contains organic matter. The company is now almost insolvent. A wealthy gentleman left a large sum a few years since to supply the city with good water, but thus far no action has been taken to carry out his intentions. Like everything else in Spanish countries, it will be done "mañana." There are a few wells in the place. Cistern water is furnished ships. Rain falls in great quantity during the winter, less in spring and fall, and scarcely any in summer.

No statistics of mortality can be obtained from the authorities, but the prevailing impression is that the city is a healthy one.

Ferrol, about 400 miles distant, is the quarantine station for this and all other Spanish ports on the Atlantic.

U. S. S. Richmond



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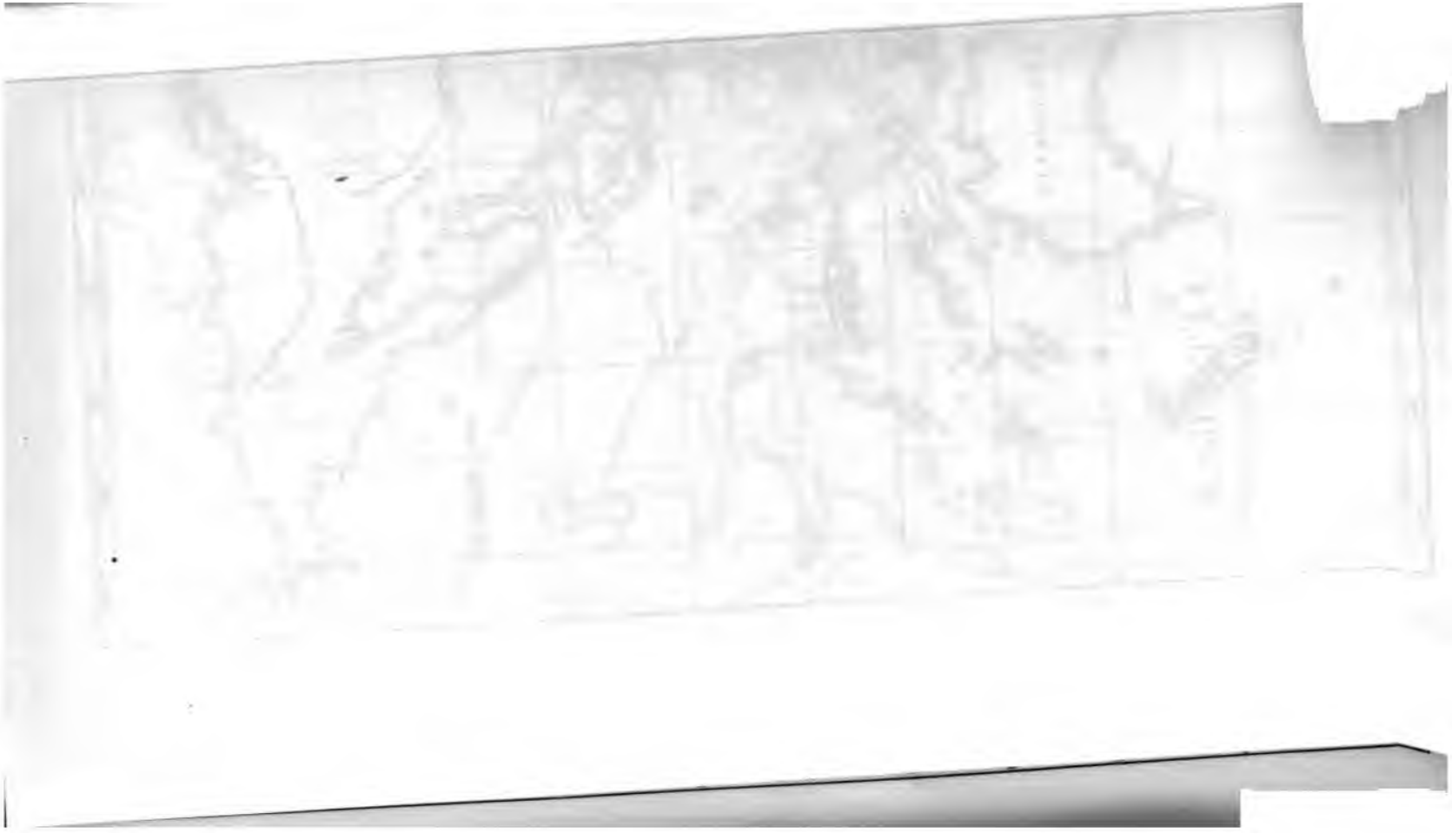


Of the hundred cases invalided there were:

Zymotic diseases	7
Constitutional diseases	30
Local diseases:	
Diseases of the nervous system	6
Diseases of the eye	1
Diseases of the ear	2
Diseases of the circulatory system	2
Diseases of the respiratory system	17
Diseases of the digestive system	12
Diseases of the genito-urinary system	9
Diseases of the integumentary system	4
Non-malignant tumors	1
Violent diseases and injuries	9

Twenty-one of these were from the Richmond; 37 from the Monongahela; 11 from the Monocacy; 12 from the Ashuelot; 14 from the Ranger; 1 from the Palos; and 4 from the Alert.

Of the 7 cases of death, 1 was among the zymotic group, occurring on the Monocacy; 1 among the constitutional, on the Richmond; 1 from disease of the nervous system, on the Ashuelot; 1 in the genito-urinary group, on the Monocacy; and 3 from injuries occurring on the Richmond, Ranger, and Monocacy.

The zymotic group contributed 113 cases of disease, or 9.82 per M, viz: 1 of cholera, 4 of febricula, 16 of simple continued fever, 85 of intermittent fever, 6 of remittent fever, and 1 of pyæmia.

Cholera.—There was but one case of cholera in the squadron, and this occurred on the Ranger, August 14, while at Nagasaki, Japan. The patient was taken at night, having been, the previous day, on duty ashore. Under suitable treatment reaction was established, and the man was returned to duty.

Simple continued fever.—Sixteen cases occurred, 10 on the Ranger and 4 on the Palos; the remaining 2 on other ships. Some of them were the result of foul bilges; and the surgeon of the Ranger alludes, in his journal, during the month of July, to the constantly-recurring cases of fever from this cause, with the recommendation that measures be taken to thoroughly cleanse them. Other cases sprung from exposure to atmospheric vicissitudes.

Intermittent fever.—There were 85 cases of an intermittent type reported; 29 occurred on the Monongahela, 27 on the Monocacy, 14 on the Richmond, and the remainder on the other ships. None died, one was invalided, and one continued. Dr. Price, of the Monocacy, remarks, in his report, that "the most prolific cause of disease is undoubtedly malaria, and, during last spring, its effects were plainly manifested on board this ship. During the month of April alone, there were ten cases of marked intermittent fever, in addition to cases of intermittent forms of diarrhœa, colic, and headache, which yielded readily to quinine."

Remittent fever.—Of this there were only 6 cases reported, and 3 were invalided. Four of the cases occurred on the Monongahela, and 2 on the Ashuelot.

Pyæmia.—The single case of this was reported from the Monocacy. James Wilson, marine, was admitted to the list with paronychia of the right thumb, June 14. On the 6th of July he was seized with pyæmic symptoms, and died next day at the general hospital, Shanghai.

Vaccina.—No cases were reported as under treatment; the following table of vaccination in the squadron is appended:

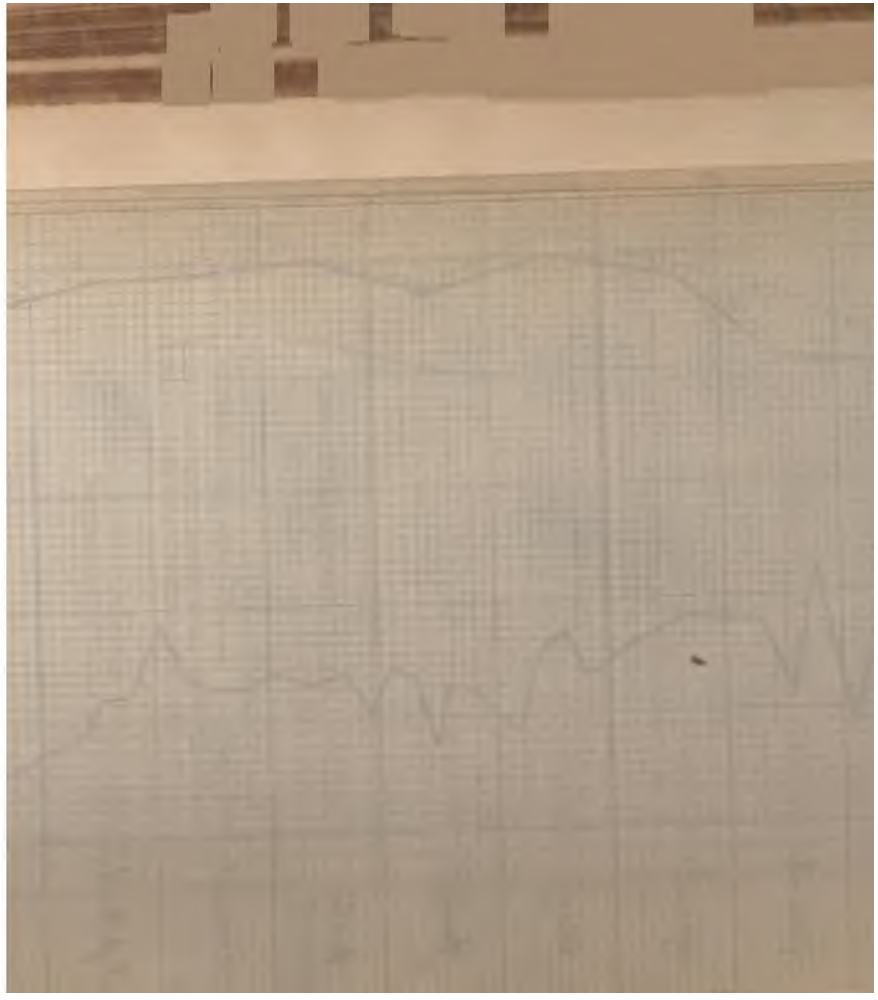
	Presenting evidence of small-pox.		Presenting evidence of previous vaccination.		No. evidence of previous vaccination.		Total.
	Successful.	Unsuccessful.	Successful.	Unsuccessful.	Successful.	Unsuccessful.	
Monocacy	0	0	7	3	1	0	11
Monongahela	0	0	0	7	0	0	7
Ranger	0	7	0	19	2	0	28
Total	0	7	7	29	3	0	46
Per cent. of cases	15.2		78.3		6.5		.....
Per cent. successful	0.0		19.4		100		21.8

Constitutional diseases.—Of this group there were 174 admissions, 151.3 per M: 3 cases of adynamia, 6 of anæmia, 6 of lumbago, 27 of acute rheumatism, 53 of chronic rheumatism, 38 of primary syphilis, 39 of secondary syphilis, and 2 of torticollis. The cases of adynamia and anæmia occurred principally in men worn out by long service and prolonged exposure to adverse climatic influences. One case of adynamia (complicated with chronic laryngitis) died on board the Richmond. Rheumatic affections occurred in 75.5 per M, of which 11.4 per M were invalided. The Monongahela reported the large number of 49 cases, the Richmond 13, the Monocacy 7, the Ranger 5, and none occurred either on the Alert or Palos.

Syphilis contributed 75.6 per M, of which 17.7 were invalided. The Ashuelot supplied 20 of the cases, the Monongahela 16, the Monocacy 15, Ranger 12, Richmond 8, and the other ships the remainder. There was but a single case reported from the Alert, and Dr. Siegfried says in his interesting report, "Venereal disease gives no trouble, the cases being few and rarely incapacitating for duty. On board this ship, a system of personal examination of the liberty men is carried out, whereby only those who are free of venereal disease are allowed to go on shore. In many ports, notably those of Japan, lock hospitals are in existance, and it becomes a duty to see that men with any form of venereal disease do not get ashore until cured. In the port of Yokohama, public women are examined—once a week commonly—and those found diseased are at once excluded and treated; the crew of this ship has suffered less here than at any other port on the station."

What compulsory examinations have accomplished in decreasing the frequency of venereal diseases among sailors of the Asiatic squadron can be shown in no more forcible and convincing manner than by comparing the sick-rates from these causes before the system was fairly inaugurated in 1869 in the Japanese ports and elsewhere, with the present rate. Dr. Kidder,* in an able paper on venereal diseases in Japan, shows that the ratio of these diseases in 1868–'69, was 425.8 per M of the strength, while this ratio has, in 1879—ten years later, when the system was in full operation—been reduced to 112.1 per M, a decrease of 313.7.

* Sanitary Reports, Bur. of M. and S., vol. 3, page 507.



There were 14 cases of tonsillitis, and the 4 cases of vermes were from lumbricoides. Cholera morbus occurred in 14 cases, chiefly on the Palos and Richmond, and were the result of imprudent indulgences. There were, in this class, 12 invalided, a ratio of 10.4 per M, and a loss of 1,037 days.

Genito-urinary system.—Of the diseases of this class, there were 112 reported, or 97.3 per M. The largest number was on the Ashuelot, 36.5 per M; next 18.2 per M on the Richmond, and the least .86 per M on the Alert. The prevailing disease of this group was gonorrhœa, which formed nearly 37 per cent. of the whole. The next most frequent was orchitis, constituting nearly 30 per cent., and usually the result of gonorrhœa; next in order was chancroid, 9 per M; then strictures, 8 per M. The number invalided in this class was 9, viz, albuminuria 1, strictura 5, orchitis 3, and gonorrhœa 1.

Locomotive system.—There were only 8 cases of disease of this class, or 6.9 per M; of these the largest proportion was on the Ashuelot.

Integumentary system.—Of the 145 cases in this group, making a ratio of 126 per M, the largest number was on the Monongahela, with a ratio of 53.9 per M, while on the Ranger there were 13.9 per M, and on the Monocacy 13.4 per M. Boils and abscesses formed the majority of cases of the integumentary diseases, or nearly 60 per M, ulcers 8 per M, and paronychia 7 per M. Four cases of this class were invalided, 3 of ulcer and 1 of paronychia.

Non-malignant tumors.—One case of sarcoma was reported from the Monongahela, which was invalided.

Poisons.—The cases recorded as occurring from the abuse of alcohol were 19, or 17.3 per M; 16 were cases of debauch, and 3 of delirium tremens. The great majority of these were on the Richmond. A case of lead-poisoning, that of the ship's painter, was reported from the Richmond, and there was one of poisoned wound on the Palos.

Injuries.—Two hundred and six cases in all, or 17.9 per M, and of these there were but two of gunshot wounds, and five burns. Over 50 per cent. of the cases were contusions and contused wounds. Lacerated wounds came next in frequency, then incised, and lastly punctured. A common form of injury on shipboard is sprain; of these 43 were returned, a ratio of 21 per M. There were 10 cases of fracture, and but one of luxation. Two men were drowned. Nine cases were invalided, 6 of fracture, 2 of sprain, and 1 of punctured wound. This class largely predominated on the Richmond, 61.7 per M; next in frequency on the Monongahela, 56.5 per M, and the number gradually diminishing on the smaller vessels.

On board the Palos, C. R. Olsen, quartermaster, was accidently shot, June 15, with a pistol. The ball, passing through the middle and ring finger of the left hand, lodged in the posterior aspect of the little finger, near the metacarp-phalangeal articulation. A deep incision was made down to the bullet, which was so firmly lodged that a sharp effort was necessary to dislodge it.

On the Monoccacy, Gustave Scheller, landsman, crushed second toe of left foot while at great gun drill. The two terminal phalanges were removed, and the wound healed speedily.

TABLE I.—*Showing the force on each ship, the number admitted and discharged, number of days under treatment, and average per M of force, on the Asiatic Station.*

Vessel.	Strength.	Strength corrected for time.	Admitted.						Discharged.				Continued.	Number of sick days.	Average number of days under treatment.	Daily average number of sick.		Number admitted per M of strength.
			From last year.	First quarter.	Second quarter.	Third quarter.	Fourth quarter.	Total.	Cured.	Transferred.	Died.	Total.				Absolute.	Per M of strength.	
Richmond, 2d rate, 2,000 tons; wood, screw; service 365 days	390	390	7	90	58	79	71	305	276	21	2	299	6	2,390	7.83+	6.54	5.68	265.21
Monongahela, 2d rate, 900 tons; wood, screw; service 322 days	259	228	9	135	125	122	27	418	381	37	....	418	....	2,653	6.34+	7.26	6.31	363.47
Monocacy, 3d rate, 747 tons; iron, paddle; service 315 days	151	151	2	32	39	53	44	170	153	11	3	167	3	1,631	9.59+	4.46	3.87	147.82
Ashuelot, 3d rate, 786 tons; iron, paddle; service 365 days	116	116	1	52	62	37	10	162	149	12	1	162	....	1,963	12.11+	5.37	4.66	140.86
Ranger, 3d rate, 541 tons; wood, screw; service 365 days	134	134	1	18	31	47	21	118	102	14	1	117	1	1,187	10.05+	3.25	2.82	100.26
Palos, 4th rate, 306 tons; wood, screw; service 365 days	46	46	3	10	8	26	8	55	54	1	....	55	....	334	6.07+	.91	0.79	47.82
Alert, 3d rate, 541 tons; iron, screw; service 184 days	170	85	....	.....	.....	9	28	37	29	4	....	33	4	226	6.27+	.61	0.53	32.27
Aggregate	1,266	1,150	23	337	323	373	209	1,265	1,144	100	7	1,251	14	10,384	8.29	28.44	24.73	1,100

Diseases and injuries.	Cases.		Number of sick days.	Number of men sick daily.		Average number of days under treatment.	Returned to duty.		Invalided.		Died.		Remaining.
	Number.	Per M of force.		Absolute.	Ratio per M of force.		Number.	Per M of force.	Number.	Per M of force.	Number.	Per M of force.	
GENERAL DISEASES.													
1.—*Zymotic.*													
Cholera, asiatica	1	.86	9	.02	.01	9	1	.86					
Febricula	4	3.4	16	.04	.03	4	4	3.4					
Febris continua simplex	16	13.9	108	.29	.25	6.7	13	11.3	3	2.6			
Febris intermittens	85	73.9	472	1.29	1.12	5.5	83	72.1	1	.86			1
Febris remittens	6	5.2	67	.18	.15	11.1	3	2.6	3	2.6			
Pyæmia	1	.86	1			1					1	.86	
Aggregate	113	98.2	673	1.81	1.5	5.9	104	90.4	7	6.0	1	.86	1
2.—*Constitutional.*													
Adynamia	3	2.6	60	.16	.14	20	2	1.7			1	.86	
Anæmia	6	5.2	87	.23	.20	14.5	6	5.2					
Lumbago	6	5.2	16	.04	.03	2.6	6	5.2					
Rheumatismus acutus	27	23.4	251	.68	.59	9.6	21	18.2	6	5.2			
Rheumatismus chronicus	53	46.0	282	.77	.66	7.2	45	39.1	7	6.0			1
Syphilis primitive	38	33.0	698	1.91	1.66	18.3	34	28.5	4	3.4			
Syphilis consecutive	39	33.9	505	1.38	1.20	12.9	26	22.6	13	11.3			
Torticollis	2	1.7	4	.01		2	2	1.7					
Aggregate	174	151.3	1,903	5.2	4.5	11.5	142	123.4	30	26.0	1	.86	1
LOCAL DISEASES.													
1.—*Diseases of the nervous system.*													
Apoplexia	1	.86	8	.02		8					1	.86	
Cephalalgia	6	5.2	78	.21	.18	13	6	5.2					
Dementia	2	1.7	56	.15	.13	28			2	1.7			
Epilepsia	3	2.6	14	.03	.02	4.6	3	2.6					
Insolatio	2	1.7	3			1.5	2	1.7					
Mania	1	.86	36	.09	.07	36			1	.86			
Melancholia	1	.86	3			3			1	.86			

TABLE I.—*Showing the force on each ship, the number admitted and discharged, number of days under treatment, and average per M of force, on the Asiatic Station.*

Vessel.	Strength.	Strength corrected for time.	Admitted.						Discharged.				Continued.	Number of sick days.	Average number of days under treatment.	Daily average number of sick.		Number admitted per M of strength.
			From last year.	First quarter.	Second quarter.	Third quarter.	Fourth quarter.	Total.	Cured.	Transferred.	Died.	Total.				Absolute.	Per M of strength.	
Richmond, 2d rate, 2,000 tons; wood, screw; service 365 days	390	390	7	90	58	79	71	305	276	21	2	299	6	2,390	7.83+	6.54	5.68	265.21
Monongahela, 2d rate, 900 tons; wood, screw; service 322 days	259	228	9	135	125	122	27	418	381	37	....	418	....	2,653	6.34+	7.26	6.31	363.47
Monocacy, 3d rate, 747 tons; iron, paddle; service 315 days	151	151	2	32	39	53	44	170	153	11	3	167	3	1,631	9.59+	4.46	3.87	147.82
Ashuelot, 3d rate, 786 tons; iron, paddle; service 365 days	116	116	1	52	62	37	10	162	149	12	1	162	....	1,963	12.11+	5.37	4.66	140.86
Ranger, 3d rate, 541 tons; wood, screw; service 365 days	134	134	1	18	31	47	21	118	102	14	1	117	1	1,187	10.05+	3.25	2.82	100.26
Palos, 4th rate, 306 tons; wood, screw; service 365 days	46	46	3	10	8	26	8	55	54	1	....	55	....	334	6.07+	.91	0.79	47.82
Alert, 3d rate, 541 tons; iron, screw; service 184 days	170	85	....	.....	.....	9	28	37	29	4	....	33	4	226	6.27+	.61	0.53	32.27
Aggregate	1,266	1,150	23	337	323	373	209	1,265	1,144	100	7	1,251	14	10,384	8.20	28.44	24.73	1,100

Diseases and injuries.	Cases.		Number of sick days.	Average number of men sick daily.		Average number of days under treatment.	Discharged to duty.		Invalided.		Died.		Remaining.
	Number.	Per M of force.		Absolute.	Ratio per M of force.		Number.	Per M of force.	Number.	Per M of force.	Number.	Per M of force.	
GENERAL DISEASES.													
1.—Zymotic.													
Cholera, asiatica	1	.86	9	.02	.01	9	1	.86					
Febricula	4	3.4	16	.04	.03	4	4	3.4					
Febris continua simplex	16	13.9	108	.29	.25	6.7	13	11.3	3	2.6			
Febris intermittens	85	73.9	472	1.29	1.12	5.5	83	72.1	1	.86			1
Febris remittens	6	5.2	67	.18	.15	11.1	3	2.6	3	2.6			
Pyæmia	1	.86	1			1					1	.86	
Aggregate	113	98.2	673	1.81	1.5	5.9	104	90.4	7	6.0	1	.86	1
2.—Constitutional.													
Adynamia	3	2.6	60	.16	.14	20	2	1.7			1	.86	
Anæmia	6	5.2	87	.23	.20	14.5	6	5.2					
Lumbago	6	5.2	16	.04	.03	2.6	6	5.2					
Rheumatismus acutus	27	23.4	251	.68	.59	9.6	21	18.2	6	5.2			
Rheumatismus chronicus	53	46.0	282	.77	.66	7.2	45	39.1	7	6.0			1
Syphilis primitive	38	33.0	698	1.91	1.66	18.3	34	28.5	4	3.4			
Syphilis consecutive	39	33.9	505	1.38	1.20	12.9	26	22.6	13	11.3			
Torticollis	2	1.7	4	.01		2	2	1.7					
Aggregate	174	151.3	1,903	5.2	4.5	11.5	142	123.4	30	26.0	1	.86	1
LOCAL DISEASES.													
1.—Diseases of the nervous system.													
Apoplexia	1	.86	8	.02		8					1	.86	
Cephalalgia	6	5.2	78	.21	.18	13	6	5.2					
Dementia	2	1.7	56	.15	.13	28			2	1.7			
Epilepsia	3	2.6	14	.03	.02	4.6	3	2.6					
Insolatio	2	1.7	3			1.5	2	1.7					
Mania	1	.86	36	.09	.07	36			1	.86			
Melancholia	1	.86	3			3			1	.86			

TABLE II.—*Showing the number of cases, the discharged, the invalided, and the dead for each disease, etc.*—Continued.

Diseases and injuries.	Cases.		Number of sick days.	Average number of men sick daily.		Average number of days under treatment.	Discharged to duty.		Invalided.		Died.		Remaining.
	Number.	Per M of force.		Absolute.	Ratio per M of force.		Number.	Per M of force.	Number.	Per M of force.	Number.	Per M of force.	
LOCAL DISEASES—Continued.													
9.—Diseases of the genito-urinary system—Continued.													
Orchitis	34	29.5	328	.90	.78	9.6	30	26.0	2	1.7	.....	.....	2
Paraphymosis	1	.86	6	.01	.....	6	1	.86	.....	.....	.....	.....	.....
Phymosis	1	.86	11	.03	.02	11	.....	.....	.....	.....	.....	.....	1
Prostatitis	1	.86	8	.02	.01	8	1	.86	.....	.....	.....	.....	.....
Urethræ strictura	10	8.6	41	.11	.....	4.1	5	4.8	5	4.8	.....	.....	.....
Aggregate	111	96.5	1,406	3.88	3.3	126	98	85.2	9	.78	1	.86	3
10.—Diseases of the locomotive system.													
Arthritis	2	1.7	16	.04	.17	8	1	.86	.....	.....	.....	.....	1
Bunion	1	.86	8	.02	.....	8	1	.86	.....	.....	.....	.....	.....
Hydrops articulorum	2	1.7	29	.08	.17	14.5	2	1.7	.....	.....	.....	.....	.....
Periostitis	1	.86	7	.01	.....	7	1	.86	.....	.....	.....	.....	.....
Synovitis	3	2.6	15	.04	.03	5	3	2.6	.....	.....	.....	.....	.....
Aggregate	9	7.84	75	.20	.17	8.33	8	6.95	.....	.....	.....	.....	1
11.—Diseases of the integumentary system.													
Abscessus	42	36.5	224	.61	.53	5.3	42	36.5	.....	.....	.....	.....	.....
Acne	1	.86	8	.02	.01	8	1	.86	.....	.....	.....	.....	.....
Eczema	5	4.8	93	.25	.21	18.6	5	4.8	.....	.....	.....	.....	.....
Furunculus	44	38.2	239	.65	.56	5.4	44	38.2	.....	.....	.....	.....	.....
Herpes	1	.86	5	.01	.....	5	1	.86	.....	.....	.....	.....	.....
Lichen	2	1.7	6	.01	.17	3	2	1.7	.....	.....	.....	.....	.....
Paronychia	11	9.5	102	.03	.02	9.2	10	8.6	1	.86	.....	.....	.....
Ulcus	13	11.3	199	.05	.04	15.3	9	7.8	3	2.6	.....	.....	1
Aggregate	119	103.47	876	2.40	2.08	7.36	114	99.13	4	3.4	.....	.....	1

Palpitation	5	4.5	18	.05	.04	3.6	4	3.4	1	.86			
Phlebitis	1	.86	4	.01		4	1	.86					
Aggregate	10	8.6	82	.21	1.	8.2	7	6.0	2	1.7			1
6.—Diseases of the absorbent system.													
Adenitis	26	22.60	332	.90	.78	12.76	25	20.8					
Aggregate	26	22.60	332	.90	.78	12.76	25	21.73					
7.—Diseases of the respiratory system.													
Asthma	1	.8	2			2	1	.86					
Bronchitis acuta	46	40	423	1.16	1.00	9.1	42	36.5	3	2.6			1
Bronchitis chronica	8	6.9	128	.35	.30	16	6	5.2	2	1.7			
Catarrhus	66	57.3	257	.70	.60	3.8	64	55.6	2	1.7			
Hæmoptysis	3	2.6	117	.30	.26	39	2	1.7	1	.86			
Phthisis pneumonica chronica	4	3.4	94	.25	.21	23.5			4	3.4			
Pleuritis	11	9.5	301	.84	.73	27.3	7	6.0	4	3.4			
Pneumonia	2	1.7	12	.03	.02	6	1		1	.8			
Aggregate	141	122.6	1,334	3.65	3.1	9.4	123	106.9	17	14.7			1
8.—Diseases of the digestive system.													
Colica	28	24.3	56	.15	.13	2	28	24.3					
Cholera morbus	14	12.1	39	.10	.08	2.7	14	12.1					
Constipatio	1	.86	1			1	1	.86					
Congestio hepatis	1	.9	9	.02	.01	9			1	.86			
Diarrhœa acuta	140	121.7	670	1.83	1.59	4.8	135	134.7	5	4.8			
Diarrhœa chronica	4	3.4	171	.46	.40	42.7	1	.8	3	2.6			
Dysenteria acuta	14	12.1	76	.20	.17	5.4	13	11.3	1	.86			
Dysenteria chronica	2	1.7	48	.13	.11	24	1	.86	1	.86			
Dyspepsia	7	6.0	10	.02	.01	1.4	7	6					
Fistula in ano	2	1.7	19	.05	.04	9.5	2	1.7					
Gastritis	3	2.6	4	.01		1.3	2	1.7	1	.86			
Hæmatemesis	2	1.7	14	.03	.02	7	2	1.7					
Hæmorrhoids	5	4.8	23	.06	.05	4.6	5	4.8					
Pharyngitis	1	.86	19	.05	.04	19	1	.86					
Tonsillitis	14	12.1	70	.19	.16	5	14	12.1					
Vermes	4	3.4	11	.03	.03	2.7	4	3.4					
Aggregate	242	210.4	1,240	3.4	3.0	5.1	230	200	12	10.4			
9.—Diseases of the genito-urinary system.													
Albuminuria	2	1.7	76	.20	.17	38			1	.86	1	.86	
Chancroid	11	9.5	214	.58	.50	194	11	9.5					
Congestio renalis	1	.86	2			2	1	.86					
Cystitis	8	6.9	76	.20	.17	9.5	8	6.9					
Enuresis	1	.86	3			3	1	.86					
Gonorrhœa	41	35.6	641	1.75	1.52	156	40	34.7	1	.86			

TABLE II.—*Showing the number of cases, the discharged, the invalided, and the dead for each disease, etc.*—Continued.

Diseases and injuries.	Cases.		Number of sick days.	Average number of men sick daily.		Average number of days under treatment.	Discharged to duty.		Invalided.		Died.		Remaining.
	Number.	Per M of force.		Absolute.	Ratio per M of force.		Number.	Per M of force.	Number.	Per M of force.	Number.	Per M of force.	
LOCAL DISEASES—Continued.													
9.—Diseases of the genito-urinary system—Continued.													
Orchitis	34	29.5	328	.90	.78	9.6	30	26.0	2	1.7	.....	.....	2
Paraphymosis	1	.86	6	.01	.....	6	1	.86	.....	.....	.....	.....	.....
Phymosis	1	.86	11	.03	.02	11	.....	.....	.....	.....	.....	.....	1
Prostatitis	1	.86	8	.02	.01	8	1	.86	.....	.....	.....	.....	.....
Urethræ strictura	10	8.6	41	.11	.....	4.1	5	4.8	5	4.8	.....	.....	.....
Aggregate	111	96.5	1,406	3.88	3.3	126	98	85.2	9	.78	1	.86	3
10.—Diseases of the locomotive system.													
Arthritis	2	1.7	16	.04	.17	8	1	.86	.....	.....	.....	.....	1
Bunion	1	.86	8	.02	.....	8	1	.86	.....	.....	.....	.....	.....
Hydrops articulorum	2	1.7	29	.08	.17	14.5	2	1.7	.....	.....	.....	.....	.....
Periostitis	1	.86	7	.01	.....	7	1	.86	.....	.....	.....	.....	.....
Synovitis	3	2.6	15	.04	.03	5	3	2.6	.....	.....	.....	.....	.....
Aggregate	9	7.84	75	.20	.17	8.33	8	6.95	.....	.....	.....	.....	1
11.—Diseases of the integumentary system.													
Abscessus	42	36.5	224	.61	.53	5.3	42	36.5	.....	.....	.....	.....	.....
Acne	1	.86	8	.02	.01	8	1	.86	.....	.....	.....	.....	.....
Eczema	5	4.8	93	.25	.21	18.6	5	4.8	.....	.....	.....	.....	.....
Furunculus	44	38.2	239	.65	.56	5.4	44	38.2	.....	.....	.....	.....	.....
Herpes	1	.86	5	.01	.....	5	1	.86	.....	.....	.....	.....	.....
Lichen	2	1.7	6	.01	.17	3	2	1.7	.....	.....	.....	.....	.....
Paronychia	11	9.5	102	.03	.02	9.2	10	8.6	1	.86	.....	.....	.....
Ulcus	13	11.3	199	.05	.04	15.3	9	7.8	3	2.6	.....	.....	1
Aggregate	119	103.47	876	2.40	2.08	7.36	114	99.13	4	3.4	.....	.....	1

Aggregate	1	.86	36	.10	.00	36	.....	.....	1	.86	.....	.....	.....
POISONS.													
Ebriositas	16	13.9	52	.14	.12	3.2	16	13.9	.....	.....	.....	.....	.....
Delirium alcoholicum	3	2.6	5	.01	.....	1.6	3	2.6	.....	.....	.....	.....	.....
Colica pictonum	1	.8	3	.02	.01	3	1	.86	.....	.....	.....	.....	.....
Vulnus venenatum	1	.8	3	.....	.....	3	1	.86	.....	.....	.....	.....	.....
Aggregate	21	18.26	68	1.83	1.50	3.2	21	18.26	.....	.....	.....	.....	.....
INJURIES.													
Violent diseases and deaths.													
Ambustio	5	4.3	25	.06	.05	5	5	4.3	.....	.....	.....	.....	.....
Contusio	38	33	242	.66	.57	6.3	37	.....	.....	.....	.....	.....	1
Fractura	10	8.6	169	.46	.40	16.9	4	3.4	6	5.2	.....	.....	.....
Hernia	1	.86	1	.....	.....	1	1	.86	.....	.....	.....	.....	.....
Luxatio	1	.86	7	.01	.....	7	1	.86	.....	.....	.....	.....	.....
Strumma	43	37.3	278	.76	.66	6.4	41	.....	2	1.7	.....	.....	.....
Submersio	2	1.7	2	.....	.....	1	.....	.....	.....	.....	2	1.7	.....
Vulnus contusum	70	60.8	560	1.53	1.33	8	67	.....	.....	.....	1	.86	2
Vulnus incisum	13	11.3	121	.33	.28	9.3	13	11.3	.....	.....	.....	.....	.....
Vulnus laceratum	15	13.0	146	.40	.34	9.7	15	13.0	.....	.....	.....	.....	.....
Vulnus punctum	6	5.2	28	.07	.06	4.6	5	4.3	1	8.6	.....	.....	.....
Vulnus sclopeticum	2	1.7	45	.12	.10	22.5	2	1.7	.....	.....	.....	.....	.....
Aggregate	206	179.12	1,624	4.44	3.8	7.88	191	166.06	9	7.82	3	2.6	3
Grand aggregate	1,365	1,100	10,384	28.44	24.73	8.30	1,144	994	100	86.9	7	6.08	14

TABLE III.—*Showing the number of cases, the invalided, and dead for each disease on each ship on the Asiatic station*—Continued.

Diseases and injuries.	Richmond.			Monongahela.			Monocacy.			Ashuelot.			Ranger.			Palos.			Alert.			Total admitted.
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	
GENERAL DISEASES.																						
1.—*Zymotic.*																						
Cholera, asiatica	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1
Febricula	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	4
Febris continua simplex	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	10	3	.....	4	.....	.....	.....	.....	.....	16
Febris intermittens	14	.....	.....	29	.....	.....	27	1	.....	9	.....	.....	1	.....	.....	3	.....	.....	2	.....	.....	85
Febris remittens	.....	.....	.....	4	2	.....	.....	.....	.....	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6
Pyæmia	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Aggregate	14	.....	.....	34	2	.....	29	1	.....	13	1	.....	12	3	.....	8	.....	.....	3	.....	.....	113
Ratio per M	12.1	.....	.....	29.5	1.7	.....	25.2	.86	.....	11.3	.86	.....	10.4	2.6	.....	6.9	.....	.....	2.6	.....	.....	.....
2.—*Constitutional.*																						
Adynamia	2	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	3
Anæmia	.....	.....	.....	2	.....	.....	.....	.....	.....	2	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	6
Lumbago	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6
Rheumatismus acutus	13	1	.....	10	5	.....	.....	.....	.....	3	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	27
Rheumatismus chronicus	2	.....	.....	40	7	.....	7	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	53
Syphilis primitiva	6	.....	.....	4	.....	.....	8	1	.....	10	1	.....	6	2	.....	3	.....	.....	1	.....	.....	38
Syphilis consecutiva	3	1	.....	12	5	.....	7	1	.....	10	4	.....	6	1	.....	.....	.....	.....	1	1	.....	39
Torticollis	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
Aggregate	34	2	1	68	17	.....	22	2	.....	25	5	.....	19	3	.....	4	.....	.....	2	1	.....	174
Ratio per M	29.5	1.7	.86	59.1	14.7	.....	19.1	1.7	.....	21.8	4.8	.....	16.5	2.6	.....	3.4	.....	.....	1.7	.86	.....	.....
LOCAL DISEASES.																						
1.—*Diseases of the nervous system.*																						
Apoplexia	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1
Cephalalgia	.....	.....	.....	.....	.....	.....	5	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	6
Dementia	.....	.....	.....	.....	.....	.....	1	1	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
Epilepsia	1	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
Insolatio	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1
Mania	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Melancholia	1	1																					1
Nausea marina	7			1																1			9
Neuralgia	6			8						2			2			1				2			16
Paralysis agitans				1	1																		1
Pleurodynia				1																			1
Vertigo	3	1														1							4
Aggregate	19	2		7	2		7	1		5	1	1	3			3				3			47
Ratio per M	10.5	1.7		6.0	1.7		6.0	.86		4.8	.86	.86	2.6			2.6				2.6			
2.—Diseases of the eye.																							
Conjunctivitis	6			4						1						1				1			13
Hordeolum				4																			4
Iritis							6						4	1									10
Aggregate	6			8			6			1			4	1		1				1			27
Ratio per M	5.2			6.9			5.2			.86			3.4	.86		.86				.86			
3.—Diseases of the ear.																							
Otalgia	3			2												1							6
Otitis	1			5	1																		6
Otorrhœa													1	1									1
Aggregate	4			7	1								1	1		1							13
Ratio per M	3.4			6.0	.86								.86	.86		.86							
4.—Diseases of the teeth.																							
Odontalgia	4						1																5
Aggregate	4						1																5
Ratio per M	3.4						.86																
5.—Diseases of the circulatory system.																							
Angina pectoris													1										1
Endocarditis	1	1																					1
Hæmorrhagia	2																						2
Palpitatio	1			4	1																		5
Phlebitis										1													1
Aggregate	4	1		4	1					1			1										10
Ratio per M	3.4	.83		3.4	.86					.86			.86										

TABLE III.—*Showing the number of cases, the invalided, and dead for each disease on each ship on the Asiatic station*—Continued.

Diseases and injuries.	Richmond.			Monongahela.			Monocacy.			Ashuelot.			Ranger.			Palos.			Alert.			Total admitted.
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	
LOCAL DISEASES—Continued.																						
6.—*Diseases of the absorbent system.*																						
Adenitis	3			9			5			2			5			1						25
Bubo	1																					1
Aggregate	4			9			5			2			5			1						26
Ratio per M	3.4			7.74			4.8			1.7			4.8			.86						
7.—*Diseases of the respiratory system.*																						
Asthma																			1			1
Bronchitis acuta	23	2		1			4	1		13			3						2			46
Bronchitis chronica	8			7	1		1	1														10
Catarrhus	16	1		33	1					7			6			3			1			68
Hæmoptysis	2	1					1															3
Phthisis pneumonica chronica				4	4																	4
Pleuritis	9	4		1									1									11
Pneumonia	1												1	1								2
Aggregate	59	8		46	6		6	2		20			11	1		3			4			149
Ratio per M	51.3	6.9		40.0	5.2		5.2	1.7		17.3			9.5	.86		2.6			3.4			
8.—*Diseases of the digestive system.*																						
Colica	7			13			1			3			4									28
Cholera morbus	4									1						9						14
Constipatio				1																		1
Congestio hepatis							1	1														1
Diarrhœa acuta	18	3		62			14			20			10	2		6			4			140
Diarrhœa chronica							2	1		2	2											4
Dysenteria acuta	5						4	1		5												14
Dysenteria chronica							1	1								1						3
Dyspepsia	6									1			1									7

Tonsillitis	3			6			1						1			3						12
Vermes							2						2									4
Aggregate	44	3	....	85			28	4		40	2		20	2	.....	20			5		....	242
Ratio per M	38.2	2.6		73.9			24.3	3.4	....	34.7	1.7		17.3	1.7		17.3			4.8			.....
9.—*Diseases of the genito-urinary system.*																						
Albuminuria	1	1					1		1													2
Chancroids	5									6												11
Congestio renalis	1																					1
Cystitis	1			2			4			1												8
Enuresis										1												1
Gonorrhœa	2			5			4			27	1		2			1						41
Orchitis	8			5			7			6	1		4	1		3			1			34
Paraphymosis				1																		1
Phymosis	1																					1
Prostatitis																1						1
Urethræ strictura	1			5	2					1	1					1	1		2	1		10
Aggregate	21	1	....	18	2	.....	16			42	3		6	1	.....	6	1	.....	3	1		112
Ratio per M	18.2	.86		16.5	1.7		13.9		....	36.5	2.6		5.2	.86		5.2	.86		2.6	.86		97.3
10.—*Diseases of the locomotive system.*																						
Bunion	1																					1
Arthritis																			2			2
Hydrops articulorum							1			1												2
Periostitis													1									1
Synovitis							2			1												3
Aggregate	1						3			2			1						2			9
Ratio per M	.86						2.6			1.7			.86						1.7			7.74
11.—*Diseases of the integumentary system.*																						
Abscessus	15			21			4						1						1			42
Acne	1																					1
Eczema							1						4									5
Furunculus	2			27			9						3						3			44
Herpes	1																					1

TABLE III.—*Showing the number of cases, the invalided, and dead for each disease on each ship on the Asiatic station*—Continued.

Diseases and injuries.	Richmond.			Monongahela.			Monocacy.			Ashuelot.			Ranger.			Palos.			Alert.			Total admitted.
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	
LOCAL DISEASES—Continued.																						
11.—*Diseases of the integumentary system*—Continued.																						
Lichen	2																					2
Paronychia	2			3			3	1					1			1			1			11
Ulcus	3	1		2	1		5						2	1					1			13
Aggregate	30	1		62	1		27	1					16	1		2			6			145
Ratio per M		.86		53.9	.86		13.4	.86					13.9	.86		1.7			5.2			126.0
NON-MALIGNANT TUMORS.																						
Sarcoma				1	1																	1
Aggregate				1	1																	1
Ratio per M				.86	.86																	
POISONS.																						
Ebriositas	13						3															16
Delirium alcoholicum	2						1															3
Colica pictonum	1																					1
Vulnus venenatum																1						1
Aggregate	16						4									1						21
Ratio per M	13.9						3.4									.86						
INJURIES.																						
Violent diseases and deaths.																						
Ambustio	3			2			7						6			1			1			5
Contusio				20			2															33
Fractura	4	3		4	3																	10

| | | |

NAVAL HYGIENE.

RICHMOND.

During the first quarter of 1879, this ship was 37 days in port and 53 days at sea, visiting, after leaving New York, Gibraltar, Ville Franche, Naples, Port Said, Suez, and Aden. In the second quarter 44 days were spent in the ports of Point de Galle, Singapore, Hong Kong, Shanghai, Taku Bar, Chefoo, and Nagasaki, and 47 days at sea. In the third quarter she was 20 days at sea; 72 days were spent in the following ports: Yokohama, Kobi, Nagasaki, Shanghai, Foochow, Amoy, and Manila. During the entire year this vessel lay in port 244 days, and the remainder of the time—121 days—she was at sea. The largest number of admissions, 90, was during the first quarter, the excess over the other quarters being due to climatic vicissitudes. The ship having fitted out in Boston during the winter, the crew experienced all the exposure incidental to the preparation of a ship for foreign service and a winter trip across the Atlantic Ocean; hence the large ratio—51.3 per M—of respiratory diseases at this time. The fewest admissions, 58, were during the second quarter, when the service at sea and in port was about equal, and the climatic influences favorable. During the third and fourth quarters the ship was mostly in port, but the number of sick was larger than in the second, partly from climatic influences and partly from dietetic and moral irregularities so often committed by sailors in port, particularly after long confinement on shipboard. This vessel is furnished with a ventilating apparatus worked by steam, by means of which the most perfect purity of the air between decks has been secured. The advantages of this method of ventilation will be seen upon comparing the relative numbers of sick on this and the other vessels of the squadron. The fleet surgeon, Medical Director F. M. Gunnell, remarks in an official report:

> The sanitary condition of this ship is very good, the ventilation is excellent. Besides the great exhausting-fans, which act as well as can be desired in removing the air in all parts of the vessel, and with the steam heaters in securing dryness, she has large square ports along the berth-deck, large hatches, and ventilating tubes aft which communicate with the lower part of the vessel.
>
> On February 29, in this port [Hong-Kong], after six weeks of rainy weather, the sick-list presented but two cases of syphilis and one of contusion; not a case of catarrh, nor any pulmonary affection nor rheumatism. This is the more remarkable because the Richmond is a single-decked corvette, not suited for a flag-ship, with the additional numbers attached to the flag. She would be comfortable with 300 souls on board, and is over-full with 366.

And in a subsequent report he says that—

> The Navy Department has every reason to be satisfied with this apparatus, which is heartily appreciated by all on board the vessel, and admired by all visitors. The nostrils do not discover the usual close and bilgy smells of the store-rooms and the lower parts of the ship. I was recently in the fore-hold when the bilge-scuttles were removed for the first time in four months. The floor was found dry and clean, and without marked odor, and the flame of a candle was strongly swayed in the direction of the aspirator. The fan was then making about 250 revolutions per minute; it is sometimes driven at 400, and even 600 revolutions. There is also a notable absence of cockroaches in the vessel below the spar-deck, while they are seen in the cabin and in the galley under the top-gallant forecastle. This is attributed to the strong currents of air produced by the ventilators.

MONONGAHELA.

The Monongahela remained in the port of Yokohama during the first quarter, 1879. In the second quarter 79 days were spent at Yokohama

and 12 at sea. In the third quarter she was at Yokohama 70 days, at Nagasaki 7 days, and at sea 15 days. During the fourth quarter she returned to the United States, having spent 30 days *en route*, and 19 days at San Francisco before going out of commission, which she did on the 49th day of the quarter. During the year she was 57 days at sea and 308 in port—a ratio of nearly 5 to 1. The sick-list was largest during the first quarter, and gradually decreased until the fourth quarter, when it quickly subsided to its lowest point. Most of the time was spent in port, where the influences were potent in the production of diseases of a zymotic and constitutional character, as well as of the digestive and integumentary systems. The last quarter was mostly spent in her return home.

MONOCACY.

During the first quarter of 1879 the Monocacy visited the ports of Yokohama, Kobi, Nagasaki, Ningpo, and Shanghai, spending 75 days in these ports, and 15 at sea. She was in Shanghai during the entire second quarter, with the exception of 2 days at Woosung. In the third quarter 53 days were spent in Shanghai, 33 at Chefoo, and 3 at sea. She was at Shanghai during the whole of the fourth quarter, excepting 3 days when she was at sea. During the year she passed 344 days in port and 24 at sea—a ratio of nearly 17 to 1. The third quarter included the greatest number of admissions, and next during the fourth quarter. This ship suffered chiefly from diseases of a miasmatic character and from those of the digestive, genito-urinary, and integumentary systems, as a consequence of her prolonged stay in port.

The appended extract from the report of Surgeon Abel F. Price will give a fair idea of her sanitary experience:

After a stay of about eight months in Yokohama, the Monocacy left that port January 16, 1879, for Shanghai, China, at which place she arrived on February 1, having stopped for a short time at Kobi and Nagasaki. Since this date the ship has been almost continuously at this port; the exceptions being a trip of eleven days to Ningpo and its vicinity on a survey (February 25 to March 8) and a visit of six weeks to Chefoo during the latter part of the summer (August 23 to October 3).

The diseases to which people at Shanghai are particularly exposed, are malarial fevers, cholera, and bowel troubles. It is now some years since there has been an epidemic of cholera among the foreign residents of this city, although it is stated to be epidemic every summer within the walled city. This city, very contracted as to space and much crowded, is situated on the river bank just above and adjoining the French concession, which in turn is just above and adjoining the English and American concessions, also on the river bank. It can be easily seen how it would, therefore, be possible for ships to get cholera on board, without there being any in the foreign settlements, from the water of the river in which they lie and which receives the filth of the walled town as it flows by it. The regulation requiring the exclusive use of distilled water on board of our men-of-war on this station is strictly carried out. The people on shore use filtered water, which is frequently boiled and refiltered before it is drunk. There are no means of learning the exact state of affairs within the walled town during the warm weather, for the combination of stenches arising from dirty Chinamen, their houses, streets, excretions, and primitive sewers, deters one from personal investigations. There are no official sources of knowledge available that I know of. Nevertheless, the number of funerals is somewhat of a guide to the state of affairs. Occasionally cholera appears among the natives that have settled around the foreigners on their concessions, appearing also in the hospitals for the native Chinese, maintained by the liberality of foreigners. During the past year there were one or two deaths only among foreigners that were ascribed to cholera epidemica.

The country around Shanghai is an alluvial deposit, and the rivers and creeks which are alternately filled and drained by the tide carrying in suspension a quantity of the soil, are of a dark and muddy appearance. It is said that malaria has lost much of its power since more attention has been paid to the drainage of the city and to the cultivation of gardens and trees in the settlement. Certainly the people both old and young compare favorably in appearance of health and vigor with those seen in other parts of the world that are deemed salubrious.

It is, however, to be remarked that large numbers of the people betake themselves to the sea-shore at Chefoo or the hills of Japan during the unhealthy months of August and September.

The trip of this ship to Chefoo during the latter part of August and September prevented, I think, no little sickness last year, for the crew presented a debilitated appearance, and the sick-list was more than doubled during our stay there, in spite of the great climatic improvement. Much more serious signs of depression would perhaps have been met with had our stay in Shanghai been prolonged at that season. The summer heat is continuous day and night and very depressing.

ASHUELOT.

During the first quarter of 1879, the Ashuelot visited the ports of Bangkok, Siam; Saigon and Louson, Cochin China; Pak Hoi and Hong-Kong, China, and Hoi How; remaining in port 72 days, and cruising 18. In the second quarter, 72 days were spent in the ports of Hong-Kong, Canton, Macao, Swatow, Amoy, Shanghai, Tien-Tsin, Chefoo, Wei Hoi, Wei, Nagasaki, and Kobi, and 19 days at sea. Of the third quarter, 86 days were passed at Yokohama, 3 days at Kobi, and 4 days at sea. Fourth quarter, 83 days at Shanghai, 4 days at Kobi, and 5 at sea. During the entire year this vessel was in port 321 days, and 44 days at sea—a ratio of nearly 8 to 1. The greatest number of admissions occurred in the second quarter, next in the first, from which the list rapidly decreased to the fourth. This ship suffered comparatively little from miasmatic diseases, standing fifth in order of sick-rate (11.35 per M), and second (21.8 per M) as regards constitutional diseases; an increase due largely to syphilis, which is rife in the ports of China visited by her. There were also a large number of diseases of the digestive organs, particularly acute diarrhœa; and the group of diseases of the genito-urinary organs furnished the largest ratio of any ship in the squadron, 36.5 per M. There was a marked absence of affections of the integumentary system, so common on the other ships, as well as of injuries.

RANGER.

The Ranger spent 78 days of the first quarter in the ports of Yokohama, Kobi, Nagasaki, Foochow, and Amoy, and 12 at sea. During the second quarter, she passed 87 days at Takao, Swatow, and Amoy, and 4 at sea. Third quarter, 80 days in port and 12 at sea; the ports visited being Yokohama, Nagasaki, Ningpo, Foochow, Pagoda, and Shanghai. Of the fourth quarter, 37 days were spent in Yokohama, 13 days at Honolulu, and 43 days at sea. She had 93 days in this quarter, owing to the repetition of the 30th November in crossing the one hundred and eightieth parallel. During the year she was 295 days in port and 71 at sea—a ratio of over 4 to 1. The daily average sick per M was 24.25. The first quarter, marked by the least number of admissions, was spent in Japan; and the increase in the second quarter is accounted for by her service in the northern Chinese ports. There was a still further increase during the third quarter, while the ship was at the southern ports of China. Diseases of the integumentary, digestive, and respiratory systems, and syphilis, formed the larger number of admissions.

PALOS.

This ship spent all the first quarter and the first 19 days of the second quarter at Tien-Tsin, China. During the remainder of the second quarter 67 days were passed at Shanghai and 5 days at sea. Of the third quarter she passed the first 54 days at Shanghai, and the remain-

der at Chefoo, 2 days having been spent en route. During the fourth quarter she was 83 days in the ports of Chefoo, Shanghai, Taku Bar, and Tien-Tsin, and 9 days at sea. During the entire year this vessel lay in port 350 days and was at sea 15 days—a ratio of nearly 24 to 1. The daily average number of sick per thousand was 19.77. The most unhealthy quarter was the third, which equalled the aggregate of all the others. The principal diseases of the ship were those of the digestive organs. The following report of Passed Assistant Surgeon C. G. Herndon has relation to the hygienic condition of the ship:

The average number of officers and men for the year has been 46. The general state of health of officers and crew has been satisfactory, and no disease of an epidemic character has appeared. On the appearance of cholera among foreigners in Shanghai last summer, the ship was promptly ordered to Chefoo, and remained there until all danger was past.

Cabin.—The cabin has a cubic capacity of 2,917 feet, and has one occupant. The lighting and ventilation of the cabin are most admirable, by means of one hatch, 3 feet 1½ inches long by 3 feet 2½ inches wide. The cabin has two stern ports; each of these measures 3 feet in height by 2 feet 3 inches in width; and four side ports, two on a side, measuring 13 inches by 12.

Wardroom.—The wardroom country has a cubic capacity of 1,917 feet. The wardroom has eight occupants. It has eight state-rooms, four to a side; each of these rooms has a net air-space of 187 cubic feet, after deducting the space occupied by bunk and bureau. These rooms are not fitted with wash-stands, but, instead, with brass rings, which hold the wash-bowls. This is a far preferable arrangement. Each state-room has an air-port, measuring 12 by 13 inches. This makes them very light, and it is always possible to read during the day without artificial light. The wardroom has two hatches; the after hatch measures 6 feet 1 inch by 2 feet 8½ inches. The forward hatch is just over center of wardroom, and measures 3 feet 7½ inches by 4 feet 7½ inches. The after hatch is entirely taken up by the ward room ladder. A better arrangement would be for commanding and wardroom officers to use the same (cabin) ladder, and then this hatch could be used entirely for purposes of ventilation and lighting. In concluding this notice of the officers' quarters, I may say that they are wonderfully well lighted, ventilated, and comfortable, and this highly satisfactory condition is entirely due to the light hurricane deck which was put on the ship in 1875 in Shanghai, but which, unfortunately for the crew, only extends to the forward fire-room bulkhead. The importance of extending this deck entirely forward cannot be overestimated, and so necessary, in a sanitary point of view, is this extension, that in April last I made it the subject of a special report to the commanding officer, which report was by him forwarded to the Navy Department. In this paper I gave the cubic space available for each man billeted on the after and forward berth-decks, and gave reasons for considering this deck totally unsuited for berthing purposes. The attention of the Chief of the Bureau of Medicine and Surgery is respectfully called to this report as showing the exact condition of the berth-deck. Since that report was made the ship's company has been increased by the addition of two men, a machinist and fireman, thus still further diminishing the space available for each man billeted on the berth-deck.

Warming.—The ship is now fitted with steam heaters; the steam for heating purposes is furnished by an auxiliary boiler recently put in.

Water.—Condensed water is used for drinking and cooking; the auxiliary boiler is used for condensing. The ship has two iron tanks, each holding about four hundred gallons.

Food.—The usual Navy ration of salt and fresh provisions is issued. During the past year the ship has been in port most of the time, and fresh provisions, including meats, vegetables, and fruits, are obtainable in such large quantities and at such reasonable prices that the men practically have them all the time. Repeated observation has shown me that the food for the crew is excellently cooked.

Clothing.—The crew as a rule purchase clothing made to order by Chinese workmen, and usually the work is satisfactorily done. The same statement holds true as regards boots and shoes.

ALERT.

This ship was at the navy-yard, Mare Island, during the first 61 days of the third quarter, and 28 days at sea en route to Japan, during which 3 days were spent at Honolulu, H. I.; 47 days of the fourth quarter were passed in the ports of Yokohama, Shanghai, Nagasaki, and Kobi, and 45 days at sea. During the half year she lay in port 111 days. The fol-

lowing extracts from the report of Passed Assistant Surgeon Siegfried gives a summary of the ship's hygienic condition for the year:

This ship has been repaired and refitted at a home port—Mare Island navy-yard, Cal.—remaining there a period of six months, most of that time without men or stores. She left Yokohama, Japan, 4th January, 1879, returning to the station and the same port on 6th November, 1879. She was built by contract in 1875, 541 tons, 1,020 tons displacement, and is bark-rigged, carrying royals. She has on the spar deck three smooth-bore guns—two IX-inch and one of XI-inch caliber, and on the forecastle a rifled 64-pounder. The complement has been 170 all told. The engines are of the compound type; there is likewise a water condenser, and a steam-heating apparatus with pipes to radiators on the berth-deck and quarters aft. There is crowding of holds and storerooms to the utmost, the hatches are inconveniently placed, and the water-closets are a constant source of annoyance because of original bad design, construction, and fittings. The vessel being small, has no bay, and the sick, when they cannot be transferred ashore, are placed under unfavorable conditions for recovery. She is easy in a seaway and buoyant, but is wet. The crew sling on the berth-deck and under the forecastle, the air-space for each man averaging above what is commonly given in United States naval vessels.

Berth-deck.—This deck is bulkheaded from the boiler and engine compartment aft, and runs forward to a small bulkhead in the bows (within which is a paint-room). There are three circular openings from the spar-deck, fitted with gratings and solid plates, well aft by the bulkhead, one large and two small ones; combined area is 7 square feet. There are three hatches forward, the fore hatch and two smaller ones under the forecastle; combined area is 50 square feet. There are fourteen air-ports, seven on each side; diameter, of each, 8½ inches; area, 56.74 square inches. An iron door exists in the bulkhead dividing the berth-deck and fire room, which can be kept open at times only. The air-space of berth-deck proper is 10,972 cubic feet; deducting 1,574 cubic feet for dispensary, pay-room, store-room, prison, hawser reels, mess chests, 140 mens' bags, pumps, etc., 9,398 cubic feet of air-space are left, a little over 100 cubic feet for each man—say 102.

The deck is usually dry and clean. It is admirably painted a light yellow color, and shellacked every week, or as often as is required; the cleansing is quickly done with hot water and hand-swab. Mess cloths and chests are taken to spar-deck when washed.

The quarters aft are as follows: The wardroom contains nine state-rooms, two store-rooms, and a pantry. The best state-rooms have an air-space of 245 cubic feet, the smallest 144 cubic feet. The wardroom country is 13 feet wide, tapering aft to a bulkhead 4 feet 9 inches wide; length, 30 feet. Wardroom proper from bulkhead to store-rooms aft, 30 feet; mean width, 23 feet; height, 6.6 inches; air-space 4,485 cubic feet; subtracting 748 cubic feet for bureaus, bunks, etc., 3,739 cubic feet are left to nine officers, giving each 415 cubic feet. There is a hatch and sky light at each end of the wardroom; area of forward one 19.36 square feet, after one 5 square feet.

The steerage is small and crowded to an unusual degree: air-space, 2,757 cubic feet; subtracting 555 cubic feet for bunks, bureaus, pumps, pantries, etc., 2,202 cubic feet are left, which, among eleven officers, gives each one about 200 cubic feet air-space. There is a steam heater in these quarters. The area of the steerage hatch is 25 square feet. Through this hatch all officers living below have egress and ingress.

The cabin is on the spar-deck and contains a forward and after compartments, a state-room on each side, bath-room, water-closet, etc.; opening into these quarters are four large ports with an area of 40 square feet, two skylights, eight circular air-ports, and two doors leading out on deck.

Ventilation is by diffusion or the natural forces only. Placing the ship in the best possible circumstances, that is, at anchor in a smooth harbor (as the air-ports are but a short distance above the water line), with no rain, and no work going on that would cause a closing of deck-plates and communicating doors, and the cold not extreme, the ventilation by the physical forces would be very fair indeed, sufficient to change the air often enough for all purposes; but these favorable conditions rarely exist, and the ventilation is usually but partial. Under favorable conditions the air flows along the berth-deck from the after-deck plates and air-ports forward, and ascends and escapes by three hatches, two of which are under the forecastle (there are also mixed currents between the three forward hatches), the current being perceptible by tests, but rarely appreciable by the senses. So placed, the openings of egress and ingress for air are apparently ample, and the ventilation cannot be complained of. Under adverse conditions, but little diffusion, or mixing of good and bad air, can take place by the hatches, all being forward, and one covered by a canvas hood, the two remaining having an area of but 22 square feet. In bad weather a somewhat similar state of affairs exists in the steerage, the only way of coming below being by the steerage hatch, which being covered by a hood, closes that compartment pretty well. The wardroom skylights are arranged to open, in stormy

weather, by an ingenious contrivance of the officers themselves, and, being situated one at each end of the compartment, ventilation is fairly carried on.

To aid ventilation on the berth-deck forward, four or more openings could be made in the bulkhead, communicating with machinery compartment, fitted with valves, air-fitters in case of dust, etc., and strong shutters; or they might lead to the open air by means of tubes and cowl, or even communicate with the fire-room ventilators. By these means, apparently simple and inexpensive, much good could be attained, and communication between boxed-up spaces below the spar-deck with freer circulation of air rendered possible.

The heating of the ship is done by Walton's patent steam radiators, one each in cabin, wardroom, steerage, and berth-deck. There were two on the berth-deck, but an accident occurring to one aft, it was replaced by one from the berth-deck. So long as the temperature is not below 40° F. there is sufficient heat, but one heater on the berth-deck forward is not enough under that temperature, using it for drying and warming purposes, and there should be another put on that deck. So far as heating by steam radiators connected with the main boilers goes, with its irregularities and annoyances consequent upon inconstant supply of steam, repairs to machinery and boilers, this ship is on a parallel with other naval vessels in that respect. As commonly placed upon our naval vessels, steam-heaters are noisy, leaky, and liable to inefficiency through circumstances not under control. When the external temperature is above 50° F. but little heat is required, and that only to correct excessive moisture, present in various localities on board all ships, but it should be nevertheless available at all times.

Water.—The condenser has a capacity of 2,000 gallons daily and produces fairly good water; but there is no aerating apparatus, and the water remains in the tanks hot and unpleasant to taste and smell for many hours. Only once has bad water been produced, and then by distilling from the water of a foul harbor, loaded with infusoria, at maximum capacity; there was organic impurity present in small amount, with an offensive bitterish taste and the smell of decaying seaweed or beach material. In this instance it appeared that some of the minuter forms of animal life completely saturated the condenser, and portions must have passed over in process of quick distillation along with the vapor, and finally reached the tanks; another distillation would probably have produced quite pure water. The exhalations from parts of machinery inspected during condensation and the character of the water alongside further strengthened this view. It occurred in Nagasaki Japan, December 16, 1879. The tanks have a capacity of 3,000 gallons; no water has been distilled that was unhealthy to an appreciable degree, to my knowledge. The daily allowance to each person is not enough for all purposes, and a fresh-water sponge bath of a gallon or two is not possible. With a condensing apparatus of recent manufacture and large capacity a liberal allowance should be given at all times. The cost of producing fresh from sea water on board varies with the cost of coal, being now about .7 cent per gallon. The present allowance is 217 gallons daily for all hands, officers and men, over 160 people at all times; it is a very small amount, too small for all the purposes of cooking, drinking, washing dishes and mess-gear, and bathing—very few people using sea water for that purpose among those aft the mast. The ward-room officers and their servants, sixteen people, have 25 gallons to drink, cook, wash dishes, and bathe with, one gallon being allowed each state-room, leaving sixteen gallons for other purposes.

Bilges.—This part of the ship has been, with a few exceptions, under sufficient control to preserve fair cleanliness. In hot weather we found by experience that flushing with sea water (in the absence of fresh) once or twice daily, with the use of disinfectants, preferably carbolic acid, kept them sweet. The peculiarity of construction—a double bottom with no means of getting between the skins and very few manholes—gave much trouble and was thought to be irreparable, but openings were so imperatively needed that they were made from time to time and masses of decomposing and foul material removed, so that now nearly all parts of the bilges can be seen and cleanliness becomes easy. The inner skin is not water-tight and never has been, and why this part of the vessel was made a hidden receptacle of foul masses of disease-breeding gases is one of the mysteries of ship-building. At one time certain parts of the ship were made uninhabitable by foul bilge gases; an officer was made ill by inhaling them in sleep; paint work, metal, and clothing were acted upon, discolored, and the latter rendered unfit for use. This state of affairs was ameliorated by the openings made into "pockets" and spaces between beams where collections were known to be; thus one after another these refuse heaps in the bilges were discovered and removed.

The temperature during the year ranged from 35° F.—the minimum—at Yokohama in January, and at sea during the voyage to San Francisco, to the seventies at Mare Island, California, and finally as high as 86° F. when returning to Japan between the parallels of 15° and 18° north latitude. The diurnal range was not great at any time, the gradations were easy and unfelt. The hygrometic conditions during the last three months were *quite favorable*, excepting at the ports of Shanghai and Nagasaki.

quite recently, where there is heavy dew at night, and the air is peculiarly raw and harsh. At Shanghai the wind that seems so coldly moist and harsh at this season of the year, winter months, comes from the steppes or plains of Tartary, and is said to be loaded with ozone. The daily range of temperature observed during a stay of two weeks at Shanghai was from 5° to 10°, the average temperature being 57° F. The average daily temperature observed at Kobi (December) was 50° F., the minimum 42° F. The last daily range was nine degrees, observed en route to Yokohama.

Epidemic and contagious diseases were absent from all the ports visited. At Honolulu, in September, it was reported that sporadic cases of measles existed, but none were observed. Shanghai did not suffer from cholera during the past summer, but Nagasaki, along with Japan generally, did severely. The following data from Nagasaki physicians may be of interest: Population, 85,000 natives, 175 foreigners; the cholera began in June and ended in November; maximum temperature in July, 94° F., minimum in January, 30° F.; mean summer temperature, 82°, with small daily range; humidity excessive in summer months; average rainfall, 58 inches for the year. The water used by natives is more or less contaminated by impurities from numerous burying-grounds on all the surrounding hills. The harbor is land-locked, and hills to 2,000 feet surround it, excepting the entrance. The city is built on the shores and at the base of these hills around the harbor, and there are canals, mountain streams, and ravines, with their attendant evils, commonly seen in China and Japan. The population of the province is 1,073,200. Cases of cholera noted, 6,960; number died, 2,550; recovered, 1,513; mortality, 36.64 per cent.; number of cases in 10,000 of population, 59.32. In the empire of Japan the number of cases was 164,181; died, 95,217; recovered, 44,904; mortality, 58.64 per cent. The first case appeared in the city of Osaka in May, the last cases in November. It is supposed that vast numbers of cholera deaths and cases are not recorded. It is not positively known from whence the disease came, but many believe that it was brought into Japan from China, from the port of Foochow, in a merchant sailing vessel. Cholera existed epidemically alone the coast of China in the summer of 1877, and there were cases in 1878. It was stated to me in Amoy, the year following the epidemic there, that that city had 10,000 dead out of 65,000 population, and that the dead were not buried or removed from the houses for many days. Few foreigners die in these cholera epidemics in this country (Japan); none at all died at Kobi. One cause of this immunity is that they have purer water, from better sources, and they exercise great care regarding its purification.

The diseases treated on board during the year were not in any instance caused by local septic influences. Atmospheric changes induced some inflammations of mucous and serous membranes, influenced undoubtedly by individual habit. Skin diseases and parasites were notably absent. The general health of the crew has been good.

On the whole, therefore, the ship itself has less than the usual pernicious influence on the health of her people. The remote and impalpable injury done to all men who live in ships and confined spaces is also present here, and is due to the introduction into the lungs and blood of noxious material never absent when human beings crowd each other with no extraordinary means of ventilation, cleanliness, and dryness.

When it is reflected upon that the sleeping space is contracted to 100 cubic feet for each man, with imperfect, or at times no ventilation; that the inspired air contains particles of woolen and linen fabric, cells of organic and inorganic material, such as are derived from food, coal, wood, boots and shoes, bedding, and personal uncleanliness; that carbonic acid gas hourly increases beyond the normal amount—along with the waste exhalations from the lungs of each sleeper—there can be no question of the weakening and destroying forces present by which each individual suffers to some extent. With a predisposition to any form of disease these forces aid its evolution; when none such exists, the vital powers are strained and exhausted prematurely, and there ensues a tendency to moral degradation and blunting of the finer perceptions and faculties of the mind. Poisoned blood will not continue the normal nutrition of the organs and tissues of the economy, and there must result vitiation more or less profound and according to the degree of exposure to such influences. Moisture aggravates such a condition, but happily this element is not prominent here, owing to the excellent manner of painting and shellacking of the decks below, with hot-water washings and by hand, as needed.

The exposure to the vicissitudes of weather and climate, excepting of course extremes, of properly fed and clothed men is not a great factor in the etiology of disease among sailors, so far as my observation goes. His life is not curtailed so much by the elements without as by the influences within his contracted home.

As to the quantity and quality of the food served to the men there can be no fault found. No disease resulted from this source, beyond eating excessively, which I have often noticed among sailors—another indication of insufficient blood aeration.

As to clothing, much depends on the man; a careful man is always amply supplied, and *vice versa*. I would suggest that division officers personally inspect and compel their men to wear proper under-clothing, and that they have coats, shoes, and stockings for a change. Shoes and stockings are very often neglected; a dry shift of flan-

nels is rarely absent, but a dry shift of shoes and socks is the exception, and much harm to health results. To conserve a sailor's health in all seasons and climates to which he is exposed requires an ample supply of clothing, and wisdom and care in its use and care.

All these things concern the sailor's efficiency, and consequently the power of his country's navy. When his physical condition is lowered he is at once a costly burden and an hinderance; he cannot do his duty properly, if at all; he occupies space in the economy of a ship that should be filled by a healthy subject, and he will be long in recovering his health. Consequently, the applicant should be unusually healthy on entering the service; should know or be taught how to clothe and feed himself, and should be given dry, pure air to sleep in; otherwise, there will be confusion, immense loss, more or less inefficiency, and the State will have for its money expenditure an inadequate naval force.

It is obvious, then, that the physical welfare of the sailor, officers and men, is as essential an element of a naval force, properly so called, as the more prominent and ostentatious ones—armor, ordnance, &c.

MEDICAL TOPOGRAPHY AND SANITARY REPORTS OF THE ASIATIC STATION.

REPORT OF SURGEON A. C. RHODES ON CHOLERA IN JAPAN.

U. S. NAVAL HOSPITAL, YOKOHAMA.

Cholera prevailed in Japan in 1819, 1821, and 1822, having been introduced from China, where it was epidemic. Between 1822 and 1850 there was complete immunity from it, but in the latter year native accounts say there was another wide-spread and fatal epidemic, which was brought to the capital by travelers from the south, affected with what was called contagious diarrhœa, which was so fatal that there were in Yedo alone 30,000 deaths from it in less than three months. At that time the authorities issued the following instructions, which were circulated among the people:

For the prevailing disease of sudden purging and vomiting there are many modes of treatment, of which the following is notified for the benefit of all:

In the way of precaution avoid exposing the body to cold; always wear a belt around the abdomen; be careful to abstain from the eating of indigestible food, or the drinking of impure water. If symptoms of the disease appear, go to bed; keep the whole body warm, and take the medicine called hako-san (hako-san is a decoction of ginger, cinnamon, and pepper). If, besides vomiting and purging, you become cold, rub briskly with a hot mixture of camphor and spirits; also put a mustard plaster on the stomach.

What results were achieved by this treatment I have no means of determining, but at any rate cholera ceased during the autumn of that year, and the empire remained free from the disease until 1861.

During 1861 and 1862 cholera prevailed in China, and was brought from there to Japan, appearing first at Nagasaki, a port only three days' sail from Shanghai. The mortality at that time is not known, no accurate statistics being kept, but the officials say many tens of thousands died.

From 1862 to 1877 Japan was exempt from cholera, but in the latter year, being again epidemic in China, it appeared during August in Nagasaki, and spread from thence to other parts of the empire, its diffusion being much aided by the movements of the troops who were engaged in suppressing the rebellion which had broken out that year. From the middle of August, when the disease was first officially reported, to the end of November, there were in the whole country nearly 15,000 cases, with a mortality of over 50 per cent. The first case in

Kanagawa ken in 1877 was on the 5th of September, others soon following, until there was a mild epidemic, which lasted about two months. The number attacked being 1,142, with 643 deaths in a population of nearly 700,000. At this time prompt measures were taken for cleansing and disinfecting the native towns; the wells especially being carefully inspected, and those closed which were found to be dirty. By these means the spreading of the disease was restrained, until with the coming of the cool December weather it entirely disappeared.

Fear was felt that cholera would be again epidemic in 1878; but with the exception of a limited outbreak in the southern provinces, and a few sporadic cases in other localities, none occurred.

In April, 1879, reports reached Yokohama that cholera had broken out in Oita ken, and was rapidly spreading. At a meeting of the board of health of Tsukiji, Tokio, held July 28, 1879, Dr. Donitz said that the present epidemic, cholera, was connected with that of 1877 in the following way: Some months ago the graves of a number of soldiers who died of cholera in 1877, and were buried in Oita ken, were opened in order to bury more decently those who had been hastily interred during the war. The present epidemic began in a few days at that point, spread slowly in Kiusiu, and after some time reached Osaka and Kobi. The British consul at Kobi forwarded a report that the disease there was not cholera, though resembling it very much; but notwithstanding his argument, the foreign physicians of Yokohama and Tokio concluded from the description given that the disease, so fatal in Osaka and Hiogo, really was cholera; and as we were in almost daily communication with those places by steamers, it was thought that as there were no efficient quarantine regulations, we should certainly suffer from it; but up to the middle of June there were no cases here, although it had then raged in Osaka for nearly two months.

On the 18th of June a steamer from Osaka, named the Niigata Maru, landed a passenger in Yokohama who had choleraic diarrhœa. This man at first went to the quarter occupied by prostitutes, but, becoming very sick, was taken to his home in Kanagawa, where he died the next day in collapse. Later in the same night the prostitute who had received the Kanagawa man was visited by a young man from Yokohama, who was at the time in perfect health; he returned to his home the next morning, and three days afterwards was attacked with cholera, of which he died in eighteen hours. The woman with whom these men had been was not at that time, or subsequently, affected with the disease.

On June 19, 1879, another steamer, the Hirashima Maru, landed a passenger at Yokohama who had choleraic diarrhœa. He went to a hotel in Otomachi for the night, and was carried the next day to the hospital, where he died in a few hours. A number of cases occurred in a few days near the hotel in Otomachi, which could be traced with great probability to contagion received in the closets of that house. Soon, however, the disease spread to other quarters of the town, and it became impossible to discover the individual exposure in each instance. From the 19th of June to the 31st of July there were 192 cases of cholera in this ken, but during the hot, moist weather of August and September the epidemic assumed more serious proportions, although, thanks to the vigorous measures adopted, it never became very severe here; there having been to September 30, 1,998 cases, and 1,384 deaths. The disease gradually subsided during the cool weather of October and November, the last report for this ken, made on November 30, giving 2,110 cases, of which 1,500 were fatal.

A report for the whole empire was made on December 20, up to which

time there had been 164,275 cases; deaths, 97,246, or a mortality of 59.31 per cent. There were only four cases of cholera among the foreigners residing in Yokohama, and in each instance direct exposure to the contagion was definitely traced. When the government found that cholera was becoming epidemic here, a board of health composed of local officials and physicians was organized for the whole of Kanagawa ken; its duties, as stated in the minutes of the first meeting, being to take preventive measures against the further spread of cholera in this ken. The board immediately ordered cleansing of the houses, closets, yards, streets, and drains throughout the town, and the liberal use of disinfectants; a mixture of sulphuric acid, sulphate of iron and water being recommended for closets, yards, drains, &c., and carbolic acid and sulphate of iron for the interior of the dwellings. Members of the board, aided by the police, made house to house inspection of the native town, and many localities found to be in an insanitary condition were thoroughly cleansed, numerous foul wells closed, and a great deal of work done, which doubtless had much effect in restraining the progress of the epidemic.

Notwithstanding the efforts made to give the people correct ideas in regard to sanitary matters, many of the more ignorant at first resisted the carrying out of the measures recommended by the board, preferring to trust to the prayers of their priests and the skill of the resident native practitioners. In one village of about 300 inhabitants there were 42 cases of cholera; 24 being fatal. At this place a committee of the health board reported that there was a total absence of drains, pools of dirty water lying in immediate proximity to the wells, and that almost all the tubs in the privies were leaky, while heaps of putrid garbage were collected about the houses, and sometimes on the ground immediately underneath. When this condition of affairs was made known to the authorities of the ken, they built a wooden conduit to supply the village with pure water from the hills; all the wells were closed; the garbage was carried away or burned; the closets were cleaned and disinfected, and the leaky tubs replaced by tight ones. Soon after these measures were taken the disease began to diminish and before long it had entirely ceased at that place.

In their anxiety to limit the epidemic, the officials put in force some very stringent regulations, as for instance at Nügata, where the sale of fish was absolutely prohibited. This interference with one of the principal articles of food caused great discontent, and finally a riot, which assumed such serious proportions that the order was rescinded, though this was not done until after the mob had destroyed much property and taken partial possession of the city.

In Yokohama, a cholera hospital with 100 beds was built, to which at first every native attacked with the disease was removed, but as this gave great dissatisfaction, the order was afterwards modified, so that those were allowed to be treated in their own houses, who were able to provide themselves with proper attendants and take the precautions considered necessary to prevent infection of adjoining premises. In every case, the house which had been occupied by a cholera patient was cleansed and disinfected, and close inspection of all who had been in contact with the disease, was kept up for ten days after exposure. Furnaces for burning articles soiled with cholera discharges were built in different parts of the town, and in some instances not only the clothes and bedding were destroyed, but even the flooring of the room where the patient had lain was torn up and burned. The bodies of all who died from cholera, whether in hospital or their own houses, were or-

dered to be cremated; and this regulation was certainly faithfully carried out in Kanagawa ken.

A quarantine station was established at Nagama, 18 miles from Yokohama, and endeavors made to prevent the importation of more cases from the south, but these efforts were fruitless on account of the opposition of some of the foreign ministers, who, relying upon the extra-territorialty clause in their treaties, refused to allow the health officer to inspect ships sailing under the flags of their countries. I am glad to say that the American minister, instead of interfering with the Japanese, did all in his power to aid them, and issued a notification calling upon American citizens to observe the quarantine regulations faithfully.

A case of cholera occurred aboard the U. S. S. Ranger, which was the only one I believe on any of our men-of-war in Japan this year. Through the kindness of Passed Assistant Surgeon H. L. Law, I am able to give the following record of it: Joseph William Seymour, engineer's yeoman, aged 24, was ashore at Nagasaki, Japan, August 8, 1879, cholera being then epidemic there. Returned to the ship on the morning of August 9, and remained in good health until the evening of August 13, when he was attacked with diarrhœa and vomiting, both of which continued through the night. Reported his sickness at 5.30 a. m. August 14, when he was first seen by Dr. Law, who found him in incipient collapse, with cold breath, shrunken face, feeble, rapid pulse, cramps in legs, vomiting, and frequent rice-water discharges from bowels. Dry heat and sinapisms were used externally, and morphine given in half-grain doses, at first every second hour, and afterwards at longer intervals. Reaction took place in about five hours, the discharges growing gradually less frequent, and ceasing at noon the next day. The patient remained weak for some time, but finally recovered entirely, going to duty in ten days from the commencement of the attack.

It is announced that the sanitary bureau in Tokio will issue a pamphlet giving the different modes of treatment used in this epidemic, and the mortality under each; when this is published I shall forward a copy of it to the Bureau of Medicine and Surgery.

In conclusion, I can only say that in view of the sanitary condition of the towns and cities of Japan when cholera began this year, it is surprising that the epidemic was not even more wide-spread and fatal. As a rule, the drinking-water in all the smaller towns is supplied by shallow wells, which are constantly liable to contamination; the drainage is everywhere inefficient, and in many places merely provided for by leaky wooden gutters, with little or no flow; the people sleep on the floors of their houses, which are raised but a few inches above the ground, and the scavenging is everywhere defective, much of the refuse being thrown into the back yards and left there to decay. As for the contents of the privies, I know that it is said that the night-soil, being the only manure, is carefully preserved until carried away by the men who sell it to the farmers; but my own observation, and information received from others, show that the tubs are often leaky, and in many places the contents are allowed to accumulate until they overflow. A committee of the Yokohama health board reported that in an examination made of one quarter of that city, in which there were 6,223 houses, inhabited by 18,325 people, there were found to be 4,095 leaky, defective, and unclean closets, and only twenty which were in tolerably good order; the difference between the number of closets, 5,015, and houses, 6,223, being accounted for by the fact that in many instances the same closet is used by the residents of two adjoining houses.

SANITARY CONDITION

OF

VESSELS ON SPECIAL SERVICE.

20 M S

U. S. S. Ticonderoga

MONTH.	CARBON DIOXIDE—PARTS PER 1,000.			RELATIVE HUMIDITY—PARTS PER 100.			
1879	0-1	1-2	2-3	40-60	60-80	80-100	0-2
January *					Spar-deck. Berth-deck		
February †	no observations						
March	"	"					
April	"	"					
May	"	"					

Record ceased, on account of "epidemic of Of

* Jan. "Most of the crew sleeps on the spar-deck".

† Feb. "Two thirds of the crew sleeps on the spar-

VESSELS ON SPECIAL SERVICE.

TICONDEROGA.

The Ticonderoga was engaged during 1879 on special service and passed the whole year in cruising along the coasts of Southern Asia and Africa. The first quarter was passed in various ports of Arabia, Persia, and India, from which she sailed down the coast of Africa. During this quarter she was at sea 47½ days, and in port 44½. In the second quarter she visited the ports of St. Helena, Cape Town, and various points in the island of Madagascar, spending 42 days at sea and 50 in port. The whole of the third quarter was passed on the west coast of Africa, of which a large number of ports were visited. She was at sea 31 days during this quarter and in port 60 days. The ports communicated with in the fourth quarter were Cape de Verde, Sierra Leone, and several points in Liberia, 16 days having been spent at sea and 74 in harbor.

This prolonged service in a hot and unhealthful climate produced a large amount of sickness, the number of admissions during the year having been 574 and the loss of service 8,003 days, giving an average sick-list of 21.92, or per thousand of strength of 89.10. There were 3 deaths on board and 12 were invalided.

By far the largest amount of sickness occurred in the class of general diseases, the number of cases aggregating 355, and the ratio of sick per thousand being 58.74. During the months of June and July an epidemic of African fever (remittent and intermittent), occurred on board, which is described in the following report of Surgeon H. M. Wells:

Soon after our arrival at Sierra Leone, Africa, January 15, 1879, many of the crew were affected with boils and abscesses. During the months of February, March, and April there were several cases of remittent and intermittent fever, but of a mild type; and I observed that as we proceeded down the west coast, the degree of fever increased. On the 27th May we anchored in Banana Creek, Congo River, and remained until June 2. Here the surrounding country is low and marshy, intercepted by lagoons which are lined with dense vegetation and mangrove trees. The malaria emitted from this region has an unpleasant odor and is very perceptible. Its effect upon the ship's company was soon evinced by symptoms characteristic of Chagres fever, namely, slight chill followed by violent fever, intense headache, frontal and occipital, vomiting and retching, severe pain in the lumbar region and lower extremities, these symptoms being followed by a cold, exhaustive perspiration.

June 3 we arrived at St. Paul de Loando, and the daily average of new cases being 10 for eight days, with an average sick-list of 40, Commodore Shufeldt decided to leave the coast and seek a change of climate at St. Helena.

We left St. Paul de Loando June 12 with 87 on the sick-list. June 14 we had 103, and on the 21st June we arrived at St. Helena with 59 cases. Francis Huxley, ordinary seaman, boy, died June 20 after five days' sickness; Edward F. Fleck, ordinary seaman, boy, died June 24 after ten days' sickness, showing the severity of this fever in some cases. We have had only three deaths out of 237 cases of malarial fever. Convalescence is slow, and the nervous prostration seems greater than in the type of remittent fever found in our Southern States and Central America. Another peculiarity is that most of the relapses have assumed an intermittent form.

At the present writing, July 11, we have 62 on the sick list, all progressing slowly but favorably.

There were altogether 181 cases of intermittent fever=613.82 per M, and 201 of remittent, or 807.07 per M. Two cases of variola occurred

which were invalided. The total invalided was 5, and there were 3 deaths, all from remittent fever. The loss of service amounted to 5,277 days.

Constitutional diseases.—There were 24 cases under this head, a ratio of 97.56 per M, of which one-half were of acute rheumatism. Of syphilis there were 9 cases, 4 of the primary, and 5 of the consecutive forms. The loss of service from this disease was 145 days, and from the class 304 days. One case of chronic rheumatism was invalided.

Nervous system.—Twelve cases are reported under this head: 7 of neuralgia=28.45 per M, and 2 each of cephalalgia and pleurodynia. One case of paralysis was invalided.

Of diseases of the eye, ear, circulatory and absorbent systems a very small percentage of sickness was reported.

Respiratory system.—Twenty-one cases in all were returned under this head, giving a ratio of 85.32 per M. Of these nearly one-half were of acute bronchitis. Two cases of phthisis pulmonalis were invalided.

Digestive system.—Thirty-seven cases reported gives a ratio of 150.40 per M, and 213 days of loss of service. The principal factors making up the list are cholera morbus, of which there were 11 cases, and acute diarrhœa, with 7 cases. One case each of acute and chronic dysentery were invalided.

Genito-urinary system.—But 9 cases were returned, of which 8 were gonorrhœa and 1 paraphymosis. The ratio was 36.58 per M, and the loss of service 255 days.

Integumentary system.—Of the 37 cases reported under this head, 34 were abscesses and boils, a point referred to by Surgeon Wells in his report. The ratio was 150.40 per M, with 429 sick days.

Injuries.—The admissions in this class were of the character which occur ordinarily on board ship, being mostly contusions and the various classes of wounds. The ratio per thousand of sick was 272.31. None were invalided.

TABLE I.—*Showing the force on each ship, the number admitted and discharged, number of days under treatment, and average per M of the force on special service.*

Vessel.	Strength.	Strength corrected for time.	Admitted.					
			From last year.	First quarter.	Second quarter.	Third quarter.	Fourth quarter.	Total.
Ticonderoga	246	246	16	71	233	173	81	574

Vessel.	Discharged.				Continued.	Number of sick days.	Average number of days under treatment.	Daily average number of sick.		Number admitted per M of strength.
	Cured.	Invalided.	Died.	Total.				Absolute.	Per M of strength.	
Ticonderoga	5	12	3	563	11	8,003	13.94	21.92	89.10	2,333.33

TABLE II.—*Showing the number of cases, the discharged, the invalided, and the dead for each disease, and their ratio per M of the force on special service.*

Diseases and injuries.	Cases.		Number of sick days.	Average number of men sick daily.		Average number of days under treatment.	Discharged to duty.		Invalided.		Died.		Remaining.
	Number.	Per 1,000 of force.		Absolute number.	Ratio per 1,000 of force.		Number.	Per 1,000 of force.	Number.	Per 1,000 of force.	Number.	Per 1,000 of force.	
GENERAL DISEASES.													
Febris cerebro spinalis	1	4.06	6	.01	.04	6	1	4.06	.....	.....	.....	.....	.....
Febris intermittens	151	613.82	2,000	5.48	22.27	13.24	150	609.75	1	4.03	.....	.....	.....
Febris remittens	201	807.07	3,263	8.94	36.34	16.24	195	792.68	2	8.13	3	12.19	1
Variola	2	8.13	8	.02	.08	.04	.....	.....	2	8.13	.....	.....	.....
Aggregate	355	1,443.08	5,277	14.45	58.74	14.84	346	1,365.85	5	20.32	3	12.19	1
CONSTITUTIONAL DISEASES.													
Adynamia	1	4.06	10	.04	.08	10	1	4.06	.....	.....	.....	.....	.....
Rheumatismus acutus	12	48.78	99	.27	1.09	8.2	11	44.71	.....	.....	.....	.....	1
Rheumatismus chronicus	2	8.13	44	.12	.48	22	1	4.06	1	4.06	.....	.....	.....
Syphilis primitiva	4	16.26	111	.30	1.21	27.7	4	16.26	.....	.....	.....	.....	.....
Syphilis consecutiva	5	20.32	34	.09	.35	6.8	5	20.32	.....	.....	.....	.....	.....
Aggregate	24	97.56	304	.83	3.37	12.66	22	89.43	1	4.06	.....	.....	1
LOCAL DISEASES.													
1.—*Diseases of the nervous system.*													
Cephalalgia	2	8.13	14	.03	.12	7	2	8.13	.....	.....	.....	.....	.....
Neuralgia	7	28.45	40	.10	.40	5.7	7	28.45	.....	.....	.....	.....	.....
Paralysis	1	4.06	48	.13	.52	48	.....	.....	1	4.06	.....	.....	.....
Pleurodynia	2	8.13	27	.07	.28	13.5	2	8.13	.....	.....	.....	.....	.....
Aggregate	12	48.78	129	32	1.32	10.75	11	44.71	1	4.06	.....	.....	.....
2.—*Diseases of the eye.*													
Conjunctivitis	4	16.26	134	.36	1.46	33.5	3	12.19	.....	.....	.....	.....	1
3.—*Diseases of the ear.*													
Otitis	1	4.06	7	.02	.08	7	1	4.06	.....	.....	.....	.....	.....

TABLE II.—*Showing the number of cases, the discharged, the invalided, and the dead for each disease, &c.*—Continued.

Diseases and injuries.	Cases.		Number of sick days.	Average number of men sick daily.		Average number of days under treatment.	Discharged to duty.		Invalided.		Died.		Remaining.
	Number.	Per 1,000 of force.		Absolute number.	Ratio per 1,000 of force.		Number.	Per 1,000 of force.	Number.	Per 1,000 of force.	Number.	Per 1,000 of force.	
LOCAL DISEASES—Continued.													
4.—Diseases of the circulatory system.													
Morbi valvularum cordis	1	4.06	1	.....	.....	1	.....	.....	1	4.06	.....	.....	.....
Palpitatio	1	4.06	24	.06	.24	24	1	4.06	.....	.....	.....	.....	.....
Aggregate	2	8.13	25	.06	.24	12.50	1	4.06	1	4.06	.....	.....	.....
5.—Diseases of the absorbent system.													
Adenitis	4	16.26	82	.22	.89	20.05	4	16.24	.....	.....	.....	.....	.....
6.—Diseases of the respiratory system.													
Bronchitis acuta	10	40.65	75	.20	.80	7.6	10	40.65	.....	.....	.....	.....	.....
Bronchitis chronica	3	12.19	203	.55	2.23	67.6	3	12.19	.....	.....	.....	.....	.....
Catarrhus	1	4.06	2	.11	.44	2	1	4.06	.....	.....	.....	.....	.....
Hæmoptysis	1	4.06	5	.01	.04	5	1	4.06	.....	.....	.....	.....	.....
Phthisis, pneumonica acuta	1	4.06	4	.01	.04	4	.....	.....	1	4.06	.....	.....	.....
Phthisis, pneumonica chronica	1	4.06	18	.05	.20	18	.....	.....	1	4.06	.....	.....	.....
Pleuritis	2	8.13	57	.15	.60	28.5	2	8.13	.....	.....	.....	.....	.....
Pneumonia	2	8.13	40	.10	.40	20	1	4.06	.....	.....	.....	.....	1
Aggregate	21	85.32	404	1.61	4.44	29.23	18	72.17	2	8.13	.....	.....	1
7.—Diseases of the digestive system.													
Cholera morbus	11	44.71	35	.09	.36	3.1	10	40.65	.....	.....	.....	.....	1
Cirrhosis hepatis	1	4.06	2	.....	.....	2	.....	.....	.....	.....	.....	.....	1
Colica	1	4.06	4	.01	.04	4	1	4.06	.....	.....	.....	.....	.....
Constipatio	2	8.13	14	.03	.12	7	2	8.13	.....	.....	.....	.....	.....
Diarrhœa acuta	6	24.39	20	.05	.2	3.33	3	12.19	.....	.....	.....	.....	3
Dysenteria acuta	5	20.32	21	.06	.24	5.8	4	16.26	1	4.06	.....	.....	.....
Dysenteria chronica	1	4.06	40	.1	.4	40	.....	.....	1	4.06	.....	.....	.....
Hæmorrhois	2	8.13	18	.05	.2	9	2	8.13	.....	.....	.....	.....	.....
Icterus	3	12.19	29	.08	.32	9.6	3	12.19	.....	.....	.....	.....	.....

Tonsillitis	4	16.26	20	.05	.2	5	4	16.26					
Pharyngitis	1	4.06	5	.01	.04	5	1	4.06					
Aggregate	37	150.40	208	.58	2.35	5.76	30	121.05	2	8.13			5
8.—Diseases of the genito-urinary system.													
Gonorrhœa	8	32.52	247	.67	2.72	30.8	8	32.52					
Paraphymosis	1	4.06	8	.02	.08	8							
Aggregate	9	36.58	255	.70	2.80	38.8	8	32.52					
9.—Diseases of the integumentary system.													
Abscessus	8	32.52	218	.59	2.39	27.2	8	32.52					
Furunculus	26	105.69	200	.54	2.16	7.6	26	105.69					
Lichen	1	4.06	5	.01	.08	5	1	4.06					
Paronychia	1	4.06	2			2	1	4.06					
Urticaria	1	4.06	4	.01	.04	4	1	4.06					
Aggregate	37	150.40	429	1.14	4.63	11.59	37	150.41					
POISONS.													
Alcoholismus	1	4.06	5	.01	.04	5	1	4.06					
VIOLENT DISEASES AND DEATHS.													
Abrasio	5	20.32	85	.23	.92	17	5	20.32					
Ambustio	4	16.26	91	.24	.96	22.7	4	16.26					
Contusio	27	109.75	305	.83	3.37	11.3	27	109.75					
Fractura	1	4.06	22	.06	.24	22	1	4.06					
Hernia	2	8.13	20	.06	.24	10	1	4.06					1
Stremma	5	20.32	27	.07	.28	5.4	5	20.32					
Vulnus contusum	3	12.19	26	.07	.28	8.6	3	12.19					
Vulnus incisum	14	56.91	128	.35	1.40	9.1	14	56.91					
Vulnus laceratum	2	8.13	18	.04	.16	9	2	8.13					
Vulnus punctum	4	16.26	22	.06	.24	5.5	4	16.26					
Aggregate	67	272.31	744	.20	.80	11.11	66	268.29					1
Grand aggregate	574	2,333.33	8,003	21.93	89.14	13.94	548	2,237.60	12	48.78	3	12.19	11

SANITARY CONDITION

OF

NAVAL HOSPITALS

NAVAL HOSPITALS.

There were treated at the various hospitals 1,324 cases of disease, which caused a loss to the service of 77,043 days. The average number of sick daily was 211.07, and the average length of treatment 58.18 days. The disposition of the cases was as follows: Returned to duty, 788; discharged from the service as unfit for further duty, 262; died, 53; continued to the next year, 221.

NAVAL HOSPITAL, CHELSEA, MASS.

At this institution 160 cases were admitted for treatment, of which 5 died and 29 were discharged from the service, the remainder being discharged for duty. In the zymotic class there were included but 5 cases, all of intermittent fever, 1 of which was totally disabled. Of constitutional diseases, there were 45 cases admitted, 2 deaths, and 7 totally invalided. The list includes 11 of adynamia, 1 of tuberculosis, 19 of rheumatism, and 14 of syphilitic affections. The deaths were from the two first-mentioned causes. In the class of nervous affections 15 cases were returned, as follows: cephalalgia, 1; dementia, 1; epilepsy, 4; insolatio, 1; melancholia, 1; neuralgia, 2; paralysis, 5. Of these 7 were totally disabled, and no deaths occurred.

In the class of eye diseases were treated 5 cases: conjunctivitis, 2; keratitis, 1; ophthalmia tarsi, 1; ulcus corneæ, 1. All were discharged to duty. Affections of the organs of circulation furnished 5 cases, mostly valvular diseases of the heart. The respiratory system gave 26 cases, of which 8 were bronchial troubles, 10 pneumonia, and 7 hœmoptysis and pneumonic phthisis. One of the latter and 1 of pneumonia died, and 3 were totally invalided. Nine cases appear under the head of diseases of the digestive system, 2 of which were entirely disabled, 1 from cirrhosis of the liver, and the other from dyspepsia. Two of the cases were anal fistulæ, and the others were mostly of diarrhœa, dyspepsia, and gastritis. There were 13 cases in the class of genito-urinary diseases, viz, 2 of cystitis, 1 each of hæmaturia and gonorrhœa, 3 of orchitis, 1 of pyelitis, and 5 of urethræ strictura; 3 were toally disabled. Of diseases of the locomotive system, 1 case of necrosis and 2 of periostitis were treated. There were but 4 cases of integumentary diseases: 2 of abscess, 1 of eczema, and 1 of ulcus. One case of ebriositas was reported. From violent diseases 28 cases were admitted, of which 7 were totally disabled, 3 from hernia, 1 from contusion, 1 fracture, and 1 luxation.

NAVAL HOSPITAL, BROOKLYN, N. Y.

At this, the largest of the naval hospitals, a total of 356 cases were reported as under treatment; 187 of these were cured, 10 died, 93 were totally invalided, and 66 continued under treatment. The number of sick days was 18,100, the daily average number of sick 49.58, and the

average length of treatment 50.84 days. In the class of zymotic affections 25 cases were recorded, 17 of malarial affections, of which 1 died, 2 of erysipelas, 3 simple continued fever, 1 typhoid fever, and 2 scarlatina; 2 were totally invalided. Of constitutional diseases there were 93 cases treated, 20 were wholly invalided, and 2 died from adynamia. Of the latter disease there was a total of 18, of rheumatic affections 29, and of syphilis 43; 2 were admitted with old age. Of local diseases, there were in the class of nervous affections 20 admissions, and 9 were wholly invalided. There were 6 cases of dementia, 4 of epilepsy, 2 of mania, 1 of melancholy, 3 of neuralgia, and 1 each of neuritis, pleurodynia, and vertigo. Affections of the eye gave 7 cases, 2 each of conjunctivitis and keratitis, and 1 each of glaucoma, iritis, and myopia; the two latter were wholly invalided. In the circulatory system, 1 aneurism was recorded, 2 cases of valvular disease of the heart, and 7 of palpitation; 6 in this class were wholly invalided. There were 11 cases of adenitis, and all were returned to duty. Sixty-two cases were included among diseases of the respiratory organs, 3 of asthma, 23 of catarrhal and bronchial affections, 1 each of emphysema, hæmoptysis, and laryngitis, 13 of pneumonic phthisis, 8 of pleuritis, and 12 of pneumonia; 15 were wholly invalided from these affections and 5 died, 2 of them from bronchitis, and 1 each from pulmonic hisis, pleurisy, and pneumonia. In the class of diseases of the digestive system there was a total of 15 cases, of which 4 were wholly invalided; 6 of the cases were diarrhœa and dysentery, 4 hæmorrhoids, and three were single cases of peritonitis, proctitis, and tonsillitis. Diseases of the genito-urinary system included 41 cases, as follows: albuminuria 3, cystitis 6, enuresis 5, gonorrhœa 9, hæmaturia 2, orchitis 7, pyelitis, phymosis, and spermatorrhœa, of each 1, stricture of the urethra 5, and varicocele 2; 8 were totally invalided and 2 died, both from albumenuria. In the locomotive system there were 6 cases, 2 of ankylosis, and 4 of synovitis; 1 of each disease was invalided. The integumentary system gave 14 cases, one-half being wholly invalided. There were 2 of abscess, 3 of eczema, 3 of ulcus, and the remainder made up of single cases of ecthyma, herpes, lichen, onychia, prurigo, and scabies. A single case of fibroma was reported; 4 cases of alcoholic poisoning were treated. Of violent diseases 47 cases were returned.

NAVAL HOSPITAL, PHILADELPHIA, PA.

The hospital at this point stands third in importance, reporting a total of 205 cases treated during the year; 149 of these were cured, 14 were wholly invalided, 15 died, and 27 were continued. The daily average number of sick was 34.06 and the average duration of treatment 60.64 days. Fifteen of the 18 cases of zymotic disease were of malarial character, and the others were of erysipelas and parotitis. The single case of erysipelas died, and 3 with intermittent fevers were wholly invalided. Forty-eight cases of constitutional affections were returned, 10 of which were adynamia, 17 rheumatism, 10 syphilis, and 7 senectus. One death was reported from the latter cause. It is proper to explain here that the reports from this hospital include the Naval Asylum, and that the cases of senectus, as well as a large percentage of affections of this and other classes, occurred among the beneficiaries of that institution, the old and worn-out veterans of the service. Medical Director R. C. Dean furnishes the following:

Vital statistics of the Naval Asylum and Naval Hospital.

A.—Causes of death among the beneficiaries of the Naval Asylum during a period of seven years and four months (eighty-eight months) from July 1, 1872, to November 1, 1879, arranged in order of frequency.

B.—(*a.*) Classification of fatal diseases among the beneficiaries during a period of forty-four months, from July 1, 1872, to March 1, 1876. (*b.*) Classification of fatal diseases among the beneficiaries during the succeeding period of forty-four months, from March 1, 1876, to November 1, 1880, for purposes of comparison.

C.—Classified enumeration of deaths among the beneficiaries during the past year, from October 1, 1879, to October 1, 1880.

D.—Classified enumeration of all deaths at the Naval Hospital during the past year, from October 1, 1879, to October 1, 1880.

The deductions to be made from these tables seem to be—

1st. The mortality during the year among the beneficiaries taken by themselves is about 2 per cent. greater than the general mortality among the patients in the hospital, the death-rate among the former being 12.2 in 100, and among the latter 10.4 in 100, the excess being of course due to the advanced age of the patients admitted from the asylum.

2d. When the observations are extended to a longer period a striking uniformity appears in the death-rate of the beneficiaries, in two periods of forty-four months each the percentage of deaths being almost precisely the same—9 in 100.

3d. The average age at death of the beneficiaries is sixty-six years and two months.

4th. The most common causes of death are the cardiac affections, the cases of hypertrophy, valvular disease, dilatation, and angina, amounting to 11. Next in frequency are the pulmonary affections phthisis and pneumonia, and thirdly, that general decline of all the functions known as senectus, while the diseases of the nervous system, paralysis and apoplexy, occupy the fourth place among the most prominent fatal diseases.

5th. The diseases classed as miasmatic in our nomenclature, such as erysipelas, pyæmia, febris enterica, etc., are so uncommon that it is fairly to be inferred that the hospital and asylum buildings are in good hygienic condition.

6th. It is remarkable, and a fact worthy of being noted, that during the whole period of seven years, included in the report, not one death is assigned to diseases having a malarial origin, notwithstanding the apparently very malarious topography of the site occupied by the buildings of the institution.

And, finally, these tables are of interest when taken in connection with the statistics of apprentice enlistment, as indicating what becomes of a youth who enters the naval service, survives the hardships of the sea, and faithfully does his duty for twenty years. Here we find him living in a comfortable home to a ripe old age and dying at last, for the most part, of some affection attended with comparatively little suffering.

A.—*Causes of death among the beneficiaries of the Naval Asylum during seven years and four months, from July 1, 1872, to November 1, 1879, arranged in order of frequency.*

Diseases.	Number.	Diseases.	Number.
Pneumonia	10	Albuminuria	1
Phthisis	9	Carcinoma	1
Senectus	8	Cerebritis	1
Paralysis	7	Cholera morbus	1
Hypertrophia cordis	5	Degeneratio arteriarum	1
Apoplexia	5	Dilitatio cordis	1
Bronchitis	5	Angina pectoris	1
Morbus valvularum cordis	4	Febris enterica	1
Adynamia	3	Pyæmia	1
Asthma	3	Dysenteria chronica	1
Alcoholismus	3	Dyspepsia	1
Aneurysmus aortæ	2	Hepatitis chronica	1
Erysipelas	2	Intussusceptio	1
Enteritis	2	Hernia strangulata	1
Diarrhœa acuta	2	Rheumatismus chronica	1
Diarrhœa chronica	2		
Hydrops	2	Total	93
Fractura	2		

Average number during period, 138; average age at death, 66 years 2 months.

B.—(*a.*) *Deaths among the beneficiaries of the Naval Asylum from July* 1, 1872, *to March* 1, 1876 (44 *months*).

Diseases.	Number.	Diseases.	Number.
Adynamia	2	Bronchitis	5
Carcinoma	1	Phthisis	4
Hydrops	1	Pneumonia	5
Rheumatismus chronicus	1	Diarrhœa acuta	2
Senectus	2	Diarrhœa chronica	2
Paralysis	4	Hepatitis chronica	1
Apoplexia	1	Enteritis	1
Cerebritis	1	Dyspepsia	1
Aneurysma aortae	1	Fractura humeri	1
Morbi valvularum cordis	3	Fractura cranii et compressio cerebri	1
Calcificatio arteriarum	1		
Asthma	2	Total	41

Average number of beneficiaries during above period, 127; mortality per period of 44 months, 35.4 in 100; mortality per annum, 9.5 deaths in 100.

(*b.*) *Deaths among the beneficiaries of the Naval Asylum from March* 1, 1876, *to November* 1, 1879 (44 *months*).

Diseases.	Number.	Diseases.	Number.
Erysipelas	2	Pyæmia	1
Febris enterica	1	Asthma	1
Alcoholismus	3	Phthisis	6
Adynamia	1	Pneumonia	5
Hydrops	1	Cholera morbus	1
Senectus	6	Dysenteria chronica	1
Apoplexia	4	Enteritis	1
Paralysis	3	Volvulus	1
Aneurysma aortae	1	Hernia	1
Dilitatio cordis	1	Albuminuria	1
Hypertrophia cordis	5		
Morbi valvularum cordis	1	Total	49
Angina pectoris	1		

Average number of beneficiaries per above period, 150; mortality per period of 44 months, 33.66 in 100; mortality per annum, 9 deaths in 100.

C.—(*b.*) *Deaths among the beneficiaries in the Naval Asylum from October* 1, 1879, *to October* 1, 1880.

Diseases.	Number.	Diseases.	Number.
Diathetic diseases:		Diseases of respiratory system—Continued:	
Carcinoma	1	Phthisis	2
Developmental:		Pleuritis chronica	1
Senectus	2	Pneumonia	2
Diseases of nervous system:		Diseases of digestive system:	
Apoplexia	2	Dysenteria chronica	1
Meningitis	1	Violent diseases:	
Diseases of respiratory system:		Fractura cervicis femoris	1
Asthma	1		
Bronchitis chronica	1	Total	15

).) *Deaths in the Naval Hospital, Philadelphia, from October* 1, 1879, *to October* 1, 1880.

Diseases.	Number.	Diseases.	Number.
ıtic diseases:		Diseases of the respiratory system—Cont'd:	
'ebris enterica	1	Asthma	1
tic diseases:		Phthisis pneumonica chronica	3
'pithelioma	1	Pleuritis	1
pmental diseases:		Diseases of the circulatory system:	
enectus	2	Aneurysma (abdominal aortal)	1
s of the nervous system:		Diseases of the digestive system:	
ıpoplexia	2	Dysenteria chronica	1
leningitis	1	Wounds, injuries, and accidents:	
s of the respiratory system:		Fractura cervicis femoris	1
'neumonia	3		
ronchitis chronica	1	Total	19

t 2 cases of diseases of the eye were treated here during the year, 1 of act and 1 of retinitis, and both recovered. In the class of vascular ses there was only 1 case of varix. Eighteen cases make the total of ses of the respiratory system; 6 of bronchial troubles, 6 of pneumonic isis, 3 of pneumonia, and single cases of hæmoptysis, laryngitis, pleuritis. There were 4 deaths; 1 each from hæmoptysis, chronic ımption, pleurisy, and pneumonia. The others were returned to The number of admissions under diseases of the digestive sys- ımounted to 18, viz: colica, 3; constipation, 2; diarrhœa, 8; dyspep- ; hepatitis and hæmorrhoids, each 1, both of which died. Three deaths occurred, from colic, chronic diarrhœa, and gastritis, mak- total of 5; 1 case of diarrhœa was wholly invalided. But 8 cases admitted with affections of the genito-urinary system; 4 with gonor- , 2 of which were wholly invalided; 2 with stricture of the urethra, ingle cases of cystitis and nephritis. In the integumentary class, e cases of abscess, ecthyma, eczema, paronychia, and unguis in- is, with 2 of ulcus, were reported. The very large number of 45 of alcoholic poisoning occurred among the beneficiaries, who, re- ng their early-formed habits of dissipation, are not able in their en- ed old age to resist the depressing influences of a too free indulgence imulants. There were 19 cases of injuries—contusions, fractures, vounds. One death occurred from fracture, and 1 person was wholly ıled by hernia.

NAVAL HOSPITAL, WASHINGTON, D. C.

e total admissions for the year at this hospital was 123, of which 7 continued to the following year, 97 were cured, 20 wholly invalided, 3 died. The total number of sick days was 4,253, and the daily av- number of sick was 11.65; average duration of treatment, 32.71 . Zymotic diseases contributed 15 cases, 1 each of diphtheria and pelas, and the remainder malarious fevers. The case of erysipelas wholly disabled. Twenty-five cases of constitutional affections were ned, which, with the exception of 4 cases of adynamia, were rheu- or syphilitic in char acter. One death occurred from adynamia, 4 in all were wholly invalided. Of nervous affections there were 5 , cephalalgia, cerebritis, meningitis, neuralgia, and paralysis. Those rebritis and meningitis resulted in death, and that of cephalalgia invalided. But 3 cases occurred under the affections of the eye; 1 of conjunctivitis, dacrocystitis, and ophthalmia. One-half the cases

of affections of the circulatory system, which numbered 8, were of valvular diseases of the heart, and there were 2 of pericarditis; 3 of the former were wholly invalided. Diseases of the respiratory system contributed 26 cases, 13 of which were bronchial or catarrhal, 9 were of phthisis, and 3 of pneumonia. There was a death from each of these. In the class 4 were wholly invalided. In the class of affections of the digestive system 13 cases were admitted, chiefly of diarrhœa, and there was 1 death from gastritis. The genito-urinary system supplied 7 cases, more than half (4) of which were of gonorrhœa; a single case of enuresis was wholly invalided. One case of hydrops articulorum was reported, and also single cases of pemphigus and prurigo. There was but 1 case of alcoholism, and of 17 of injuries 2 were finally invalided.

NAVAL HOSPITAL, NORFOLK, VA.

The hospital at this point is the second one in size and importance, and afforded treatment for 252 persons during the year; of this number 136 were returned to duty, 47 were finally invalided, 9 died, and 60 were continued. The total number of sick-days was 17,085, and the average duration of treatment 67.79 days; average daily number of patients 46.86. Zymotic affections contributed 26 cases, as follows: Diphtheria and roseola, of each 1; typhoid fever, 3, with one death; and intermittent fever 10, giving also 1 death; 5 each of remittent fever and measles. In the class there were 3 wholly invalided. There were 58 cases of constitutional affections, 10 of which were wholly invalided and 2 died; 7 were of adynamia, 1 anæmia, 1 hydrops, 23 rheumatism, 5 senectus, and 21 syphilis. The deaths were from adynamia and senectus. The cases of nervous disease numbered 10, of which 3 were of epilepsy, 2 neuralgia, and single cases of apoplexy, cephalalgia, melancholia, vertigo, and paralysis; the latter resulted in death, and 1 of the cases of epilepsy was invalided. There were 5 cases of eye troubles; 3 of conjunctivitis, and 1 each of glaucoma and keratitis; the latter was wholly invalided. Three cases of deafness were reported, and one was wholly invalided. The circulatory system yielded 13 cases, as follows: hypertrophy of the heart, 3; disease of the valves, 2; palpitation, 4; varix, 2; and single cases of pericarditis and phlebitis. There were no deaths, and 5 were discharged from the service. Fifty-three cases of disease of the respiratory organs were reported, viz, 27 of catarrh and bronchitis, 3 of laryngitis, 10 of pneumonic phthisis, 8 of pneumonia, and 3 of phlebitis. There were 4 deaths, 3 from consumption and 1 from laryngitis. Eight within this class were wholly invalided. Only 13 cases were reported under the head of diseases of the digestive system, and these were mostly of a mild character. One case of diarrhœa was invalided. The genito-urinary system afforded 16 cases; 2 of albuminuria, 2 of orchitis, 4 of prostatitis, and 4 of urethral stricture. One case of enureses, 1 of gonorrhœa, and 1 of prostatitis were wholly invalided. Single cases of necrosis, periostitis, and synovitis were reported, which recovered. There were 14 cases of integumentary diseases, mostly ecthyma, lichen, and ulcus; 6 were wholly invalided, with the two latter affections. Two cases of alcoholism were treated. The class of injuries gave 26 cases, the principal factors of which were fracture, contusion, hernia, and sprain; 7 of the number were totally disabled.

NAVAL HOSPITAL, PENSACOLA, FLA.

The hospital at this point is employed for the local necessities of the station, and is held in readiness for emergencies which may arise upon

vessels stationed or cruising in that vicinity. Whenever it is possible, however, the sick of the squadron are invalided to some Northern hospital, and this fact will explain the small number treated here. But 6 cases were admitted during the year, of which 2 were cured, 1 was wholly invalided, and 3 were continued. The total number of sick-days resulting was 824, and the average duration of treatment 137.33 days. The following were the cases referred to: Febris intermittens, 1; adynamia, 2; phthisis pneumonica, 2; hernia 1.

NAVAL HOSPITAL, MARE ISLAND, CAL.

This hospital receives the sick of the Pacific station, and is, therefore, from its situation, one of great importance. The number of cases reported for the year amounted to 140, of which 72 were cured, 41 wholly invalided, 5 died, and 118 were continued to the next year. The total number of sick-days was 11,296, which gives a daily average of 30.94. The average length of treatment was 80.68 days. The 10 cases reported of a zymotic character were, with the exception of 3 of measles, malarious fevers acquired on the coast of Mexico, and all recovered. In the constitutional group 7 were of adynamia resulting from exposures to the same influences, of which 2 were discharged from the service, and 1 died. There was 1 case of diabetes, which was wholly invalided, and there were 9 of rheumatic and 19 of syphilitic affections, making a total of 36 for the class. The group of nervous affections was represented by 21 cases, as follows: cephalalgia, 1; dementia, 6; epilepsy, 4; irritatio spinalis, 1; mania, 3; melancholia, 1; neuralgia, 3; paralysis, 2. There were no deaths from these causes, and 9 were wholly invalided. Of eye affections there were 7 cases; 4 of retinitis, 2 of iritis, and 1 of cataract; 3 were invalided. Single cases of otitis, otorrhœa, and surditas were reported. The most important cases recorded under the head of diseases of the circulatory system were 2 of aneurism, 1 of which resulted in death, while the other was wholly invalided. Besides these, there were single cases of angina pectoris and valvular disease of the heart. The respiratory system included 25 cases of disease, 5 of which were bronchial, 2 pneumonia, and all the others, 18, were of pneumonic phthisis; 2 of these died and 4 were disabled. The digestive system only gave 9 cases of a slight character, and all recovered. There were but 7 cases of affections of the genito-urinary system, 3 of which were urethral strictures, and the rest single cases of albuminuria, enuresis, nephritis, and orchitis; 4 were invalided wholly. In the group of skin diseases there was only 1 case, which was of ulcus; 1 case of alcoholic poisoning was also treated. There were 14 admissions from injuries, and 1 case of fracture resulted in death; 5 of the number were discharged for disability.

NAVAL HOSPITAL, YOKOHAMA, JAPAN.

This hospital for the care of the sick of the Asiatic squadron, received 75 patients during the year, which gave a total of 4,182 sick-days. The average number of sick was 11.45, and the average duration of treatment 5,576 days; 48 of the number were returned to duty, 3 died, 17 were wholly invalided, and 7 continued. In the zymotic class there was but 1 case, which was of intermittent fever. The group of constitutional diseases gave by far the largest number of cases, 26; they consisted of adynamia, 2; anæmia, 1; podagra, 1; rheumatism, 11; syphilis, 11; three cases of rheumatism were wholly invalided.

Four cases of nervous affections were reported; single cases of dementia, epilepsy, neuralgia, and paralysis; the three latter were wholly invalided. There were no diseases of the eye, and but 2 of the ear, 1 of otitis, and 1 of deafness; the last discharged for disability. The circulatory system gave 3 cases; 1 of angina pectoris, which died; 1 of palpitatio, which was wholly invalided; and 1 of disease of the valves of the heart. Twelve cases were reported under the head of the respiratory system, one-half of which were phthisis; 2 deaths resulted from this disease; 3 were invalided, 2 from phthisis and 1 from pneumonia, of which there were 2 cases. There were but 9 cases of disease of the digestive system, all of which speedily recovered; six cases of disease of the genito-urinary system were reported; 4 of urethral stricture, and 1 each of cystitis and nephritis, both of which were wholly invalided. There were but 2 cases of ulcus in the group of skin diseases, and only 8 cases of injuries, 5 of which were fractures; 2 in this class were discharged for disability.

The following table shows the number of admissions at each hospital, the number of cured, invalided, dead, and continued to the next year, with the daily average of sick:

Table showing the aggregate number of admissions, discharges, and deaths, number of sick days, duration of treatment, and daily average number of men at the naval hospitals.

Diseases and injuries.	Number of cases.	Number of sick days.	Average number of men sick daily.	Average number of days under treatment.	Number discharged to duty.	Number invalided.	Number died.	Number continued.
GENERAL DISEASES.								
1.—Zymotic diseases.								
Diphtheria	2	47	12	23.5	2	.....	.....	.....
Erysipelas	4	240	65	60	1	2	1	.....
Febris continua simplex	3	206	56	68.6	2	1	.....	.....
Febris enterica	9	370	1.01	41.1	6	.....	1	2
Febris intermittens	57	2,312	6.33	40.5	42	5	2	8
Febris recidiva	1	40	1	40	1	.....	.....	.....
Febris remittens	12	879	2.40	73.2	9	1	.....	2
Morbilli	8	241	66	30.1	7	1	.....	.....
Parotitis	2	36	09	18	2	.....	.....	.....
Roseola	1	19	05	19	.....	.....	.....	1
Scarlatina	2	121	33	60.5	2	.....	.....	.....
Total	101	4,511	12.35	44.6	74	10	4	13
2.—Constitutional diseases.								
Adynamia	60	2,916	7.98	47.6	27	19	6	8
Anæmia	2	142	38	71	2	.....	.....	.....
Carcinoma	1	287	78	287	1	.....	.....	.....
Diabetes	1	288	78	288	1	.....	.....	.....
Diabetes insipidus	1	35	09	35	.....	1	.....	.....
Epithelioma	1	316	86	316	.....	.....	.....	1
Hydropa	1	12	03	12	.....	.....	.....	1
Podagra	3	113	30	37.6	3	.....	.....	.....
Rheumatismus acutus	44	1,963	5.37	44.6	34	5	1	4
Rheumatismus chronicus	72	3,912	10.71	54.3	52	12	.....	8
Senectus	14	1,199	3.28	85.6	3	4	1	4
Scrofula	1	27	07	27	1	.....	.....	.....
Syphilis primitiva	51	2,290	6.02	43.1	40	2	.....	9
Syphilis consecutiva	79	5,200	14.25	65.8	48	17	.....	14
Tuberculosis	1	10	02	10	.....	.....	1	.....
Total	333	18,620	51.01	55.91	212	60	9	32

Table showing the aggregate number of admissions, discharges, and deaths, etc.—Continued.

Diseases and injuries.	Number of cases.	Number of sick days	Average number of men sick daily.	Average number of days under treatment.	Number discharged to duty.	Number invalided.	Number died.	Number continued.
LOCAL DISEASES.								
1.—Diseases of the nervous system.								
Apoplexia	2	54	14	27	.....	.....	1	1
Cephalalgia	5	256	70	51.2	1	1	.....	3
Cerebritis	1	4	01	4	.....	.....	1	.....
Chorea	1	47	12	47	.....	1	.....	.....
Dementia	16	2,446	6.70	152.8	4	5	1	6
Epilepsia	17	779	2.13	45.8	2	11	.....	4
Insolatio	2	62	16	31	2	.....	.....	.....
Irritatio spinalis	1	154	42	15.4	.....	1	.....	.....
Mania	5	98	26	19.6	2	2	.....	1
Melancholia	5	277	76	55.4	.....	4	.....	1
Meningitis	1	1	.....	1	.....	.....	1	.....
Neuralgia	12	824	2.25	68.6	7	4	.....	1
Neuritis	1	19	05	19	1	.....	.....	.....
Paralysis	17	1,974	5.40	116.1	4	3	2	8
Pleurodynia	2	93	25	46.5	2	.....	.....	.....
Vertigo	2	110	30	55	1	1	.....	.....
Total	90	7,198	19.72	79.9	26	33	6	25
2.—Diseases of the eye.								
Amaurosis	1	94	25	94	.....	1	.....	.....
Cataracta	2	18	04	9	1	1	.....	.....
Conjunctivitis	7	149	40	21.2	6	.....	.....	1
Dacrocystitis	1	94	25	94	1	.....	.....	.....
Fistula lachrymalis	1	14	03	14	.....	.....	.....	1
Glaucoma	1	46	12	46	1	.....	.....	.....
Iritis	4	118	32	29.5	1	2	.....	1
Keratitis	3	160	43	53.3	2	.....	.....	1
Myopia	1	8	02	8	.....	1	.....	.....
Ophthalmia	1	20	05	20	1	.....	.....	.....
Ophthalmia tarsi	1	32	08	32	1	.....	.....	.....
Retinitis	5	494	1.35	98.8	2	2	.....	1
Ulcus cornea	1	20	05	20	1	.....	.....	.....
Total	29	1,267	3.47	43.6	17	7	.....	5
3.—Diseases of the ear.								
Otitis	2	140	38	70	1	1	.....	.....
Otorrhœa	4	307	84	76.7	2	1	.....	1
Surditas	3	365	1	121.6	1	1	.....	1
Total	9	812	2.22	90.2	4	3	.....	2
4.—Diseases of the teeth.								
Odontoscisis	1	101	27	101	.....	1	.....	.....
Total	1	101	27	101	.....	1	.....	.....
5.—Diseases of the circulatory system.								
Aneurysma	3	44	12	14.6	.....	2	1	.....
Angina pectoris	2	84	23	42	1	.....	1	.....
Hypertrophia cordis	4	164	44	41	2	1	.....	1
Morbi valvularum cordis	14	885	2.42	61.0	2	5	1	6
Palpitatio	14	855	2.42	61.0	6	7	.....	1
Pericarditis	3	7	.01	3.3	3	.....	.....	.....
Phlebitis	1	10	.02	10	1	.....	.....	.....
Varix	3	567	1.55	189	1	2	.....	.....
Total	44	2,616	7.16	59.4	16	17	3	8

Table showing the aggregate number of admissions, discharges, and deaths, etc.—Continued.

Diseases and injuries.	Number of cases.	Number of sick days.	Average number of men sick daily.	Average number of days under treatment.	Number discharged to duty.	Number invalided.	Number died.	Number continued.
LOCAL DISEASES—Continued.								
6.—Diseases of the absorbent system.								
Adenitis	24	2,314	6.33	96.4	17	.....	.....	7
Total	24	2,314	6.33	96.4	17	.....	.....	7
7.—Diseases of the respiratory system.								
Asthma	7	271	.74	38.7	4	2	.....	1
Bronchitis acuta	35	277	3.49	56.4	27	1	1	6
Bronchitis chronica	25	1,964	5.38	78.5	12	5	1	7
Catarrhus	22	688	1.88	31.2	18	2	.....	2
Emphysema	1	27	.07	27	.....	1	.....	.....
Hæmoptysis	6	611	1.67	101.8	4	1	1	.....
Laryngitis	7	270	.73	38.5	4	2	1	.....
Ozæna	1	36	.09	36	1	.....	.....	.....
Phthisis pneumonica acuta	7	263	.72	37.5	6	.....	1	.....
Phthisis pneumonica chronica	61	7,107	19.47	116.5	21	18	10	12
Pleuritis	14	958	2.62	68.4	7	2	2	3
Pneumonia	38	1,992	5.45	52.4	22	5	4	7
Total	224	15,464	42.36	69.3	126	39	21	38
8.—Diseases of the digestive system.								
Ascites	2	259	.70	129.5	2	.....	.....	.....
Cholera morbus	3	108	.29	36	3	.....	.....	.....
Cirrhosis hepatis	1	19	.05	19	.....	1	.....	.....
Colica	5	118	.35	23.6	3	1	1	.....
Congestio hepatis	1	94	.25	94	.....	.....	.....	1
Constipatio	2	365	1	182.5	1	.....	.....	1
Diarrhœa acuta	19	813	2.22	42.9	15	2	.....	2
Diarrhœa chronica	10	314	.86	31.4	7	2	1	.....
Dysenteria acuta	3	815	2.23	271.6	3	.....	.....	.....
Dysenteria chronica	7	316	.86	45.1	4	1	.....	2
Dyspepsia	7	506	1.38	72.2	3	1	1	2
Fistula in ano	4	250	.68	62.5	4	.....	.....	.....
Gastritis	5	187	.51	37.4	4	.....	1	.....
Hæmorrhois	11	380	1.04	34.5	8	1	1	1
Hepatitis acuta	1	65	.17	65	.....	.....	.....	1
Hepatitis chronica	2	225	.61	112.5	1	.....	1	.....
Icterus	1	83	.22	83	1	.....	.....	.....
Peritonitis	1	9	.02	9	.....	.....	.....	1
Proctitis	1	38	.10	38	1	.....	.....	.....
Tonsillitis	5	90	.24	18	5	.....	.....	.....
Total	91	5,054	13.84	55.5	65	9	6	11
9.—Diseases of the genito-urinary system.								
Albuminuria	6	302	.82	50.3	.....	2	2	2
Balanitis	1	15	.04	15	1	.....	.....	.....
Cystitis	11	863	2.36	78.4	4	6	.....	1
Enuresis	8	231	.63	28.8	.....	6	.....	2
Gonorrhœa	19	989	2.73	52.0	14	4	.....	1
Hæmaturia	3	73	.20	24.3	3	.....	.....	.....
Hydrocele	1	31	.08	31	1	1	.....	.....
Nephritis	4	268	.76	67	2	1	.....	1
Orchitis	16	949	2.6	59.3	14	.....	.....	1
Prostatitis	1	65	.17	65	.....	.....	.....	1
Pyalitis	1	9	.02	9	.....	.....	.....	1
Phymosis	1	3	.01	3	1	.....	.....	.....
Spermatorrhœa	1	38	.10	38	1	.....	.....	.....
Urethræ strictura	23	1,473	4.03	64.0	16	3	.....	4
Varicocele	2	37	.01	18.5	2	.....	.....	.....
Total	98	5,346	14.64	54.5	59	23	2	14

ible showing the aggregate number of admissions, discharges, and deaths, &c.—Continued.

Diseases and injuries.	Number of cases.	Number of sick days.	Average number of men sick daily.	Average number of days under treatment.	Number discharged to duty.	Number invalided.	Number died.	Number continued.
LOCAL DISEASES—Continued.								
10.—*Diseases of the locomotive system.*								
ıkylosis	2	31	.09	15.5	.....	1	.....	1
xalgia	1	130	.35	130	.....	.....	.....	1
drops articulorum	1	55	.15	55	.....	1	.....	.....
crosis	2	141	.38	70.5	2	.....	.....	.....
riostitis	3	88	.24	29.3	2	.....	.....	1
novitis	5	148	.40	29.6	3	1	.....	1
Total	14	593	1.36	42.3	7	3	.....	4
I.—*Diseases of the integumentary system.*								
ccessus	9	667	1.82	74.1	3	1	.....	5
thyma	2	309	.84	154.5	1	1	.....	.....
zema	6	502	1.37	83.6	4	2	.....	.....
runculus	1	31	.08	31	1	.....	.....	.....
rpes	3	388	1.06	129.3	1	2	.....	.....
chen	1	47	.12	47	1	.....	.....	.....
ychia	1	48	.13	48	.....	1	.....	.....
ronychia	1	61	.16	61	1	.....	.....	.....
mphigus	1	20	.05	20	1	.....	.....	.....
urigo	2	59	.16	29.5	1	1	.....	.....
abies	1	36	.09	36	1	.....	.....	.....
guis involutis	1	8	.02	8	1	.....	.....	.....
cus	18	773	2.11	42.9	8	6	.....	4
rruca	1	57	.15	57	.....	.....	.....	1
Total	48	3,006	8.23	62.62	24	14	.....	10
NON-MALIGNANT TUMORS AND CYSTS.								
stis	1	15	.04	15	1	.....	.....	.....
broma	1	66	.18	66	.....	.....	.....	1
roma	2	264	.72	132	.....	1	.....	1
Total	4	345	.94	86.2	1	1	.....	2
POISONS.								
cholismus	2	64	.17	32	2	.....	.....	.....
lirium tremens	1	13	.03	13	1	.....	.....	.....
riositas	51	1,210	3.31	23.7	47	1	.....	3
Total	54	1,287	3.52	23.8	50	1	.....	3
VIOLENT DISEASES AND DEATHS.								
rasio	3	131	.35	43.6	1	.....	.....	2
nbustio	3	91	.24	30.3	3	.....	.....	.....
ngelatio	1	7	.01	7	1	.....	.....	.....
ntusio	27	1,053	2.88	39	21	3	.....	3
actura	35	2,411	6.60	68.8	19	10	2	4
rnia	39	2,952	8.08	75.6	8	21	.....	10
xatio	4	161	.44	40.2	1	2	.....	1
remma	28	844	2.31	30.1	21	3	.....	4
lnus contusum	8	210	.57	26.2	7	.....	.....	1
lnus incisum	3	209	.57	69.6	2	1	.....	.....
lnus laceratum	3	321	.87	107	2	.....	.....	1
lnus punctum	5	97	.26	19.4	3	1	.....	1
lnus sclopetarium	1	22	.06	22	1	.....	.....	.....
Aggregate	160	8,509	23.31	53.1	90	41	2	27
Grand aggregate	1,324	77,043	211.07	58.18	788	262	53	221

Table showing the number of admissions, invalided, and dead, for each disease and injury at the several naval hospitals.

Diseases and injuries.	Hospital, Chelsea, Mass.			Hospital, Brooklyn, N.Y.			Hospital, Philadelphia, Pa.			Hospital, Washington, D.C.			Hospital, Norfolk, Va.			Hospital, Pensacola, Fla.			Hospital, Mare Island, Cal.			Hospital, Yokohama, Japan.			Total.		
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
GENERAL DISEASES.																											
1.—*Zymotic diseases.*																											
Diphtheria	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....
Erysipelas	.....	.....	.....	2	1	.....	1	.....	1	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	2	1
Febris continua simplex	.....	.....	.....	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	1	.....
Febris enterica	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	1	.....	.....	.....	5	.....	.....	.....	.....	.....	9	.....	1
Febris intermittens	5	1	.....	14	.....	1	14	2	.....	10	.....	.....	10	2	1	1	.....	.....	2	.....	.....	1	.....	.....	57	5	2
Febris recidiva	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Febris remittens	.....	.....	.....	3	.....	.....	1	1	.....	3	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	1	.....
Morbilli	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	1	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	8	1	.....
Parotitis	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....
Roseola	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Scarlatina	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....
Total	5	1	.....	25	2	1	18	3	1	15	1	.....	26	3	2	1	.....	.....	10	.....	.....	1	.....	.....	101	10	4
2.—*Constitutional diseases.*																											
Adynamia	11	3	1	18	9	2	10	1	.....	4	1	1	7	1	1	2	1	.....	7	2	1	2	1	.....	61	19	6
Anæmia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	2	.....	.....
Carcinoma	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Diabetes	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Diabetes insipidus	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	1	1	.....
Epithelioma	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Hydrops	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Podagra	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	3	.....	.....
Rheumatismus acutus	12	2	.....	10	1	.....	4	.....	.....	6	1	.....	7	.....	1	.....	.....	.....	1	.....	.....	4	1	.....	44	5	1
Rheumatismus chronicus	7	1	.....	19	3	.....	13	1	.....	2	.....	.....	16	4	.....	.....	.....	.....	8	1	.....	7	2	.....	72	12	.....
Senectus	.....	.....	.....	2	1	.....	7	1	1	.....	.....	.....	5	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14	4	1
Scrofula	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Syphilis primitiva	2	.....	.....	22	1	.....	8	1	.....	8	.....	.....	8	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	51	2	.....
Syphilis consecutiva	12	1	.....	21	5	.....	2	.....	.....	4	2	.....	13	3	.....	.....	.....	.....	10	6	.....	8	.....	.....	70	17	.....
Tuberculosis	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1
Total	45	7	2	93	20	2	48	4	1	25	4	1	58	10	2	2	1	.....	36	10	1	26	4	.....	333	60	9

LOCAL DISEASES.																															
1.—*Diseases of the nervous system.*																															
Anoplexia							1		1				1														2		1
Cephalalgia	1			1						1	1		1							1						5	1	
Cerebritis										1		1															1		1
Chorea							1	1																			1	1	
Dementia	1	1		6	2		2		1											6	2		1			16	5	1
Epilepsia	4	3		4	1		1	1					3	1						4	4		1	1		17	11	
Insolatio	1						1																			2		
Irritatio spinalis																				1	1					1	1	
Mania				2	2															3						5	2	
Melancholia	1	1		1	1		1	1					1							1	1					5	4	
Meningitis										1		1														1		1
Neuralgia	2			3	2					1			2							3	1		1	1		12	4	
Neuritis				1																						1		
Paralysis	5	2					7		1	1			1		1					2			1	1		17	3	2
Pleurodynia				1			1																			2		
Vertigo				1	1								1													2	1	
Total	15	7		20	9		15	3	3	5	1	2	10	1	1					21	9		4	3		90	33	6
2.—*Diseases of the eye.*																															
Amaurosis																				1	1					1	1	
Cataracta							1			1	1															2	1	
Conjunctivitis	2												3													7		
Dacrocystitis										1																1		
Fistula lachrymalis				2									1													1		
Glaucoma				1																						1		
Iritis				1	1								1	1						2						4	2	
Keratitis	1			2																						3		
Myopia				1	1																					1	1	
Ophthalmia										1																1		
Ophthalmia tarsi	1																									1		
Retinitis							1													4	2					5	2	
Ulcus corneae	1																									1		
Total	5			7	2		1			3	1		5	1						7	3					29	7	
3.—*Diseases of the ear.*																															
Otitis																				1	1		1			2	1	
Otorrhœa													3	1						1						4	1	
Surditas							1													1			1	1		3	1	
Total							2						3	1						3	1		2	1		9	3	

Table showing the number of admissions, invalided, and dead, for each disease and injury at the several naval hospitals—Continued.

Diseases and injuries.	Hospital, Chelsea, Mass.			Hospital, Brooklyn, N.Y.			Hospital, Philadelphia, Pa.			Hospital, Washington, D.C.			Hospital, Norfolk, Va.			Hospital, Pensacola, Fla.			Hospital, Mare Island, Cal.			Hospital, Yokohama, Japan.			Total.		
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
LOCAL DISEASES—Continued.																										
4.—Diseases of the teeth.																										
Odontoscisis	.....	....	....	.....	....	....	.....	....	....	.....	....	....	.....	....	..	.....	....	....	1	1	....	.....	....	....	1	1	....
5.—Diseases of the circulatory system.																										
Aneurysma	.....	....	....	1	1	....	.....	....	....	.....	....	....	.....	....	....	.....	....	....	2	1	1	.....	....	....	3	2	1
Angina pectoris	.....	....	....	.....	....	....	.....	....	....	1	....	....	3	1	....	.....	....	....	1	....	....	1	....	1	2	....	1
Hypertrophia cordis	.....	....	....	.....	....	....	.....	....	....	4	3	....	2	..	....	.....	....	....	.....	....	....	.....	....	....	4	1	....
Morbi valvularum cordis	4	....	1	2	1	....	.....	....	....	4	3	....	2	....	....	.....	....	....	1	1	....	1	....	....	14	5	1
Palpitatio	1	....	....	7	4	....	.....	....	....	1	....	....	4	2	....	.....	....	....	.....	....	....	1	1	....	14	7	....
Pericarditis	.....	....	....	.....	....	....	.....	....	....	2	....	....	1	....	....	.....	....	....	.....	....	....	.....	....	....	3	....	....
Phlebitis	.....	....	....	.....	....	....	....	....	....	.....	....	....	1	....	....	.....	....	....	.....	....	....	.....	....	....	1	....	....
Varix	.....	....	....	.....	..	....	1	....	....	.....	....	....	2	2	....	.....	....	....	.....	..	..	....	....	....	3	2	....
Total	5	....	1	10	6	....	1	....	....	8	3	....	13	5	....	.....	....	....	4	2	1	3	1	1	44	17	3
6.—Diseases of the absorbent system.																										
Adenitis	1	....	....	11	....	....	4	....	....	3	....	....	5	....	....	.....	....	....	.....	....	....	.....	....	....	24	..	....
7.—Diseases of the respiratory system.																										
Asthma	.....	....	....	3	....	....	2	....	....	1	1	....	.....	....	....	.....	....	....	1	1	....	.....	....	....	7	2	....
Bronchitis acuta	2	....	....	13	1	1	2	....	....	4	....	....	12	....	....	.....	....	....	.....	....	....	2	....	....	35	1	1
Bronchitis chronica	3	1	....	7	1	1	2	....	....	.....	....	....	7	3	..	.....	....	....	4	....	....	.....	....	....	25	5	1
Catarrhus	3	....	....	3	1	....	.....	....	....	8	1	....	8	....	....	.....	....	....	.....	....	....	.....	....	....	22	2	....
Emphysema	....	....	....	1	1	....	.....	....	....	.....	....	....	.....	....	....	.....	....	....	.....	....	....	.....	....	....	1	1	....
Hæmoptysis	2	....	....	1	....	....	1	....	1	.....	....	....	1	1	....	.....	....	....	1	....	....	.....	....	....	6	1	1
Laryngitis	1	....	....	1	....	....	1	....	....	1	1	....	3	1	1	.....	....	....	.....	....	....	.....	....	....	7	2	1
Ozæna	.....	....	....	.....	....	....	.....	....	....	.....	....	....	1	....	....	.....	....	....	.....	....	....	.....	....	....	1	....	....
Phthisis pneumonica acuta	.....	....	..	1	..	....	2	....	....	2	....	....	....	....	....	1	....	....	.....	....	....	1	....	1	7	....	1
Phthisis pneumonica chronica	5	2	1	12	8	1	4	....	1	7	1	1	10	1	3	1	....	....	17	4	2	5	2	1	61	18	10
Pleuritis	.....	....	....	8	....	1	1	....	1	.....	....	....	3	1	....	.....	....	....	.....	1	....	2	1	....	14	2	2
Pneumonia	10	....	1	12	3	1	3	....	1	3	....	1	8	1	....	.....	....	....	2	....	....	.....	....	....	38	5	4
	32	3	3	69	15	5	16	....	4	26	4	2	53	8	4	2	....	....	25	6	2	13	3	2	224	39	21

8.—*Diseases of the digestive system.*																															
Ascites										1			1													2				
Cholera morbus	1			1						1																3				
Cirrhosis hepatis	1	1																								1	1			
Colica				1			3		1				1	1												5	1	1		
Congestio hepatis																				1						1				
Constipatio							2																			2				
Diarrhœa	1			2			7	1		3	1		5									1				19	2			
Diarrhœa chronica	1			2	2		1		1	1										1				4		10	2	1		
Dysenteria acuta													2											1		3				
Dysenteria chronica	1			2	1								1											3		7	1			
Dyspepsia	1	1					3		1				3													7	1	1		
Fistula in ano	2												1							1						4				
Gastritis	1									2		1								2						5		1		
Hæmorrhois				4	1		1		1	4			2													11	1	1		
Hepatitis acuta													1													1				
Hepatitis chronica							1		1											1						2		1		
Icterus																				1						1				
Peritonitis				1																						1				
Proctitis				1																						1				
Tonsillitis				1						1			1							2						5				
Total	9	2		15	4		18	1	5	13	1	1	18	1						9			9			91	9	6		
9.—*Diseases of the genito-urinary system.*																															
Albuminuria				3	1	2							2							1	1					6	2	2		
Balanitis										1																1				
Cystitis	2	1		6	3		1						1	1									1	1		11	6			
Enuresis				5	4					1	1		1							1	1					8	6			
Gonorrhœa	1	1		9			4	2		4			1	1												19	4			
Hæmaturia	1			2																						3				
Hydrocele							1																			1				
Nephritis													2							1			1	1		4	1			
Orchitis	3			7						1			4	1						1						16	1			
Prostatitis													1													1				
Pyelitis	1																									1				
Phymosis				1																						1				
Spermatorrhœa				1																						1				
Urethræ strictura	5	1		5			2						4							3	2		4			23	3			
Varicocelo				2																						2				
Total	13	3		41	8	2	8	2		7	1		16	3						7	4		6	2		98	23	2		
10.—*Diseases of the locomotive system.*																															
Ankylosis				2	1																					2	1			
Coxalgia																							1			1				
Hydrops articulorum										1	1															1	1			
Necrosis	1												1													2				

Table showing the number of admissions, invalided, and dead, for each disease and injury at the several naval hospitals—Continued.

Diseases and injuries.	Hospital, Chelsea, Mass.			Hospital, Brooklyn, N.Y.			Hospital, Philadelphia, Pa.			Hospital, Washington, D.C.			Hospital, Norfolk, Va.			Hospital, Pensacola, Fla.			Hospital, Mare Island, Cal.			Hospital, Yokohama, Japan.			Total.		
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
LOCAL DISEASES—Continued.																										
10.—*Diseases of the locomotive system*—Continued.																										
Periostitis	2												1												3		
Synovitis				4	1								1												5	1	
Total	3			6	2					1	1		3									1			14	3	
11.—*Diseases of the integumentary system.*																										
Abscessus	2			2	1		1						4												9	1	
Ecthyma				1	1		1																		2	1	
Eczema	1			3	2		1						1												6	2	
Furunculus													1												1		
Herpes				1									2	2											3	2	
Lichen				1																					1		
Onychia				1	1																				1	1	
Peronychia							1																		1		
Pemphigus										1															1		
Prurigo				1	1					1															2	1	
Scabies				1																					1		
Unguis involutis							1																		1		
Ulcus	1			3	1		2			4	1		5	4					1			2			18	6	
Verruca													1												1		
Total	4			14	7		7			6	1		14	6					1			2			48	14	
NON-MALIGNANT TUMORS AND CYSTS.																										
Cystis							1																		1		
Fibroma				1																					1		
Sarcoma																			1			1	1		2	1	
Total				1			1												1			1	1		4	1	

| POISONS. | | |

RECAPITULATION.

Hospitals.	Remaining from last year.	Admitted.					Discharged.				Continued.	Total number of sick days.	Average number of days under treatment.	Daily average number of sick.
		First quarter.	Second quarter.	Third quarter.	Fourth quarter.	Total treated.	Cured.	Invalided.	Died.	Total.				
Chelsea, Mass	19	32	21	50	28	160	97	29	5	131	29	8,871	55.44	24.30
Brooklyn, N. Y	45	57	52	114	88	356	167	93	10	290	66	18,100	50.84	49.58
Philadelphia, Pa	45	38	34	40	48	205	149	14	15	178	27	12,432	60.64	34.06
Washington, D. C	22	46	37	12	13	130	97	20	6	123	7	4,253	32.71	11.65
Norfolk, Va	37	53	49	21	92	252	136	47	9	192	60	17,085	67.79	46.86
Pensacola, Fla	1	.....	1	4	.....	6	2	1	.....	3	3	824	137.33	2.25
Mare Island, Cal	25	30	14	49	22	140	72	41	5	118	22	11,296	80.68	30.94
Yokohama, Japan	13	17	11	29	5	75	48	17	3	68	7	4,182	55.76	11.45
Total	207	273	219	319	306	1,324	788	262	53	1,103	221	77,043	58.18	211.07

SANITARY CONDITION

OF

NAVAL STATIONS.

NAVAL STATIONS.

There are 17 shore stations where officers and men of the service are given medical aid. Special sick quarters are provided only at Portsmouth, N. H., and at Annapolis, Md.; those cases demanding prolonged treatment are promptly sent to the various hospitals of convenient access to the stations.

Navy-yard, Portsmouth, N. H.—The naval station at this place is unprovided with proper hospital accommodations, an old building in the yard, which is totally unfit for the purpose, being used as temporary quarters. A station hospital of inexpensive construction would be of great advantage at this point, and at the same time would serve in the emergencies of an epidemic as a resort for the sick of our vessels of war. I alluded to the importance of this establishment in my report of last year, and the department judiciously recommended an appropriation for this purpose. I feel bound, by every consideration of sanitary necessity, to renew my request for an appropriation to erect appropriate buildings for the purposes indicated in that report. At this station there were treated during the year 65 cases, of which 7 were invalided and one died. The total number of sick days amounted to 2,044, which gives a daily average of 5.6 of sick, and an average number of days under treatment of 30.50. In the zymotic class of diseases there were but two cases of simple continued fever. Of the 20 cases reported under the head of constitutional affections, 14 were rheumatic troubles, of which two were invalided; and 5 syphilitic, 1 of these being also invalided. Of the 4 cases of nervous diseases, 2 were of neuralgia, 1 of which was invalided; of spinal irritation, and 1 of melancholia. There were but 2 cases of diseases of the eye, 1 of conjunctivitis, and 1 of retinitis, both of which 1 recovered. Of the respiratory system there were 7 cases, two of which were invalided. There were 4 cases of catarrhal troubles, 1 of asthma, and 1 of pneumonia. Eleven cases of disorders of the digestive system embraced 3 of tonsillitis, 3 of diarrhœa, 1 of cholera morbus, 1 of chronic dysentery, and 3 of hæmorrhoids—all of which recovered. Of the 8 cases of diseases of the genito-urinary system there were, gonorrhœa 3, orchitis 3, stricture of the urethra 1, and albuminuria 1, which died. Of the 12 cases falling under the head of violent diseases, there were 6 contusions, 3 sprains, 1 fracture, and 1 hernia, which was invalided.

Navy-yard, Boston, Mass.—At this station there were 154 admissions; 124 were cured, 25 invalided, and 3 were continued. The total number of sick days was 988, the average length of treatment 6.41 days, and the daily average number of patients 2.70. There were 11 cases of zymotic diseases reported, 2 of which were invalided, and all were malarial in character. Among the constitutional affections there were classed 15 cases, of which 6 were invalided, viz, anæmia 1, rheumatism 1, syphilis 4. Eight cases of rheumatism and 1 of primary syphilis were returned to duty cured. Of the 6 cases of diseases of the nervous system, 4 were neuralgia, 1 spinal irritation (invalided), and 1 of paralysis (also invalided). In the class of affections of the eye, there were 1 case of hor-

deolum and 3 cases of conjunctivitis, one of the latter being invalided. Disease of the circulatory organs was reported in 4 cases, 2 of valvular disease and 2 of palpitation. Both of the former, and 1 of the latter were invalided. The respiratory system gives 28 cases; catarrhal and bronchial troubles 21, epistaxis 1, hæmoptysis 1, chronic pulmonary phthisis 3, and pleuritis 2. One case of bronchitis, 1 of hæmoptysis, and 2 of chronic phthisis were invalided. Diseases of the digestive system numbered 27, of which 2 were invalided. The most frequent disorder was acute dysentery, of which there were 13 cases—cholera morbus 4, colic 2, hæmorrhoids and tonsillitis, of each, 3. Of the affections of the genito-urinary system, 4 cases were of gonorrhœa and 1 of chancroid. In the integumenatry system, 2 cases of eczema were reported, 1 of which was invalided, and 2 of furunculus. Eight cases of alcoholismus were reported. The class of violent diseases includes 40, of which 4 were invalided. There were 19 cases of sprains, 7 of abrasion, 7 of contusion, 2 of fracture, 3 of contused and 2 of incised wounds.

Navy-yard, New York.—There were at this station in all 19 admissions, making a total of 161 sick days; daily average number of sick, 44; average number of days under treatment 8.47. There were reported 1 case of intermittent fever, 2 of acute rheumatism, 1 of neuralgia, and the rest made up mostly of catarrhal affections and diseases of the digestive system.

Navy-yard, League Island, Pa.—The total number treated at this station was 131, of which 100 were discharged cured, 30 invalided, and 1 died. The number of sick days amounted to 734; average number of days under treatment, 5.60; daily average number of patients, 2.01. Among the zymotic diseases there were 44 cases of intermittent fever, of which 5 were invalided, and 1 of simple continued fever. Of the 9 cases of constitutional diseases, viz, anæmia 1, rheumatism 2, and syphilis 6, all but 1 case of rheumatism were invalided; of the 3 cases of nervous affections, 1 each of dementia and paralysis was invalided, and 1 of neuralgia cured. Among the group of affections of the respiratory organs, there were 8 cases of catarrhal or bronchial character, 1 case of hæmoptysis, 1 of pleurisy, and 3 cases of pneumonia. In the group of diseases of the digestive system, 25 cases were returned, 1 of which, a case of chronic diarrhœa, was invalided. The factors in this class were principally diarrhœa, hæmorrhoids, dyspepsia, and tonsillitis. The 6 cases of genito-urinary affections include 5 of gonorrhœa, 3 of which were invalided, and 1 of hæmaturia. Two cases of periostitis were reported, 1 of which was invalided. The class of integumentary diseases contain 10 cases, mostly of furunculus; 1 case of this disease and 1 of ecthyma were invalided. There were 8 cases of alcoholism, of which 3 were invalided. The class of injuries comprehended 7 cases, 3 of which were of congelatio; 1 case of lacerated wound was invalided.

Navy-yard, Washington, D. C.—The number of cases treated here was 172; total number of sick-days, 1,084; average number of days under treatment, 6.30; and daily average number of patients, 2.97. The zymotic affections numbered 42, of which 7 were invalided. With the exception of 1 case of measles, all were of malarial character. Of the 10 cases of constitutional diseases, 4 were of rheumatic origin, and 6 of syphilitic; 2 of the former, and 4 of the latter were invalided. There were 10 cases of nervous diseases reported, of which 7 were neuralgia, 1 dementia, (invalided), and 2 cephalalgia. There was 1 case of opthalmia, and 1 of surditas, the latter being invalided. Of the 5 cases of vascular diseases, 2 were of valvular disease of the heart, and 1 of palpitation, all of which were invalided; and 2 of varix. The affections of the respiratory

organs amounted to 25, and of this number 23 were catarrhal or bronchial in character, and 1 each of chronic pneumonic phthisis, and pneumonia; 5 were invalided in this class. Diseases of the digestive organs were more frequent than of any other class, and were mostly of diarrhœa or hæmorrhoids. They were 35 in number, and 7 were invalided. In the class of diseases of the genito-urinary organs, 8 cases, mostly of gonorrhœa, were reported, 3 of which were invalided. There was a single case of synovitis. Five cases of integumentary diseases were reported, 2 of which were invalided. Twelve cases of alcoholism occurred, and in the class of violent diseases 16 cases were recorded, mainly sprains and contusions.

Navy-yard, Norfolk, Va.—There were 160 cases returned from this station, with a total of 722 sick days, and a daily average sick-list of 170; the average length of treatment was 4.51 days. The number of zymotic affections reported were 43, 14 of which represent an epidemic of catarrh, and 24 malarious fevers. One case of diphtheria occurred which was invalided, as were 1 case of epidemic catarrh and 8 cases of remittent and intermittent fevers. There were 2 cases of mumps and 1 of measles. Of the 20 cases of constitutional affections, 11 were of rheumatic origin, and 8 of syphilitic; 4 of the latter and 1 of the former were invalided. Of 9 cases coming within the class of nervous affections, 2 were of apoplexy, 3 of neuralgia, and 1 each of the following: Epilepsy, cephalalgia, cerebritis, and dementia, the last being invalided. This also happened to the single case of palpitation and to the 3 cases of adenitis reported. In the class of respiratory diseases there was a total of 9, 1 being pneumonia and the rest catarrhal or bronchial; the former was invalided. The largest number of diseases fell among the class of diseases of the digestive system, of which there were 33—mostly diarrhœa and dysentery, and there were 5 cases of colica and 4 of gastritis; only 2 were invalided. There were 14 cases of diseases of the genito-urinary system, viz: Albuminuria 2, gonorrhœa 7, hæmaturia 1, nephritis 1, orchitis 2, phymosis 1; 5 were invalided. In the class of integumentary diseases there were 8 cases, of which 2 were invalided, one for furunculus, and 1 for urticaria. Abuse of alcohol yielded 4 cases. Fifteen cases of injuries were noted.

Navy-yard, Pensacola, Fla.—At this station, but 25 were returned as treated, the total number of sick-days being 226, with a daily average of sick of .61; the average duration was 9.04 days. There were 6 cases of intermittent fever, 4 of adynamia, and the rest were local affections, chiefly as follows: bronchitis 2, ascites 2, acute dysentery 2, peritonitis 1, cystitis 3, stricture of the urethra 1.

Navy-yard, Mare Island, Cal.—The number of cases here amounted to 88, of which 4 were continued to the next year. The loss of service amounted to 1,457 days, and the average length of treatment 16.55 days. The daily average of sick was 3. The cases falling among the zymotic were, 1 of erysipelas and 2 of intermittent fever. Of the 17 cases of constitutional affections, 10 were of rheumatism, 6 of syphilis, and 1 of adynamia; 2 cases of the former and 1 of syphilis were invalided. Of the nervous affections, 1 case was of epilepsy and 2 of neuralgia. In the class of diseases of the respiratory system, 16 cases were reported, of which 2 were of asthma, 10 of catarrh, and 4 of chronic pulmonary phthisis; 1 of the latter was invalided. The 14 cases of the digestive system were mostly of diarrhœa. Seven cases of disease of the genito-urinary system were reported, and 1 death from albuminuria. Of integumentary diseases, 3 cases were reported, and 4 from abuse of alcoholic

liquors; 1 of the latter was invalided. There were 18 cases resulting from injury, chiefly sprains, contusions, and wounds.

Marine Barracks, N. Y.—There were 325 cases reported from this station, of which 305 were cured, 17 invalided, and 3 continued. The total loss of service was 2,916 days, the average duration of treatment 8.97 days, and the daily average number of patients 7.98. Forty-one cases fell among the zymotic class, and 1 was invalided. The largest number (32) were of malarial origin. In the constitutional class there were 39 cases, 22 of which were of rheumatic, and 16 of syphilitic origin. One case of consecutive syphilis was invalided. Among the nervous diseases were 4 cases of neuralgia, 1 of nostalgia, 1 of epilepsy, and 1 of paralysis; all were returned to duty. The 8 cases of eye disease included 6 of conjunctivitis, and 1 each of hordeolum and opthalmia; 1 of the latter was invalided. There was 1 case of otitis, and of the 5 cases of adenitis 2 were invalided. A large number of cases were embraced among diseases of the respiratory organs. They numbered 57, of which 2 were invalided; 51 were catarrhal or bronchial in character; and of the remaining 6, 2 were of asthma, 2 of pneumonia, and 1 each of hæmoptysis and laryngitis. The most frequent diseases were those of the digestive system, of which 79 were recorded, viz: cholera morbus 8, colic 1, constipation 4, acute diarrhœa 30, acute dysentery 1, dyspepsia 1, hæmorrhoids 2, icterus 1, pharyngitis 16, tonsillitis 15. The genito-urinary system supplied 35 cases of disease, mostly venereal, viz: 9 cases of chancroid, 16 of gonorrhœa, and 4 orchitis; 1 of the latter, 1 of hæmaturia, and 1 of cystitis were invalided. There were but 3 cases of integumentary disease, and 4 from abuse of alcohol, 1 of the latter being invalided. Contusions, sprains, and wounds supplied 18 cases, 1 of which was invalided.

Marine Barracks, Washington, D. C.—The total number of cases treated was 145; 130 were discharged cured and 15 were invalided. The number of sick-days was 903, average duration of treatment 6.22 days, and the average number of patients 2.47. Twenty of the zymotic class were of malarial origin, and there were 2 cases of vaccina. Of the total of 22 cases, 4 were invalided. Nineteen cases of constitutional diseases were noted, 10 being of rheumatic and 6 of venereal origin; the remaining 3 were adynamia; 8 of the entire number were invalided. Nervous diseases amounted to 6 cases; 3 of cephalalgia and 3 of neuralgia. There were 2 cases of conjunctivitis, 2 of odontalgia, and 2 of heart disease; 1 valvular and the other functional. The respiratory system supplied 20 cases, viz, 5 bronchial, 10 catarrhal, 1 laryngitis and 2 of pneumonia. There were 41 cases of diseases of the digestive organs, 12 of colic, 10 of acute diarrhœa, 1 of acute dysentery, 2 of dyspepsia, 1 of icterus, 8 of pharyngitis, and 6 of tonsillitis. The genito-urinary organs furnished only 3 cases: 1 of gonorrhœa, 1 of orchitis, and 1 of paraphymosis. There was one case of periostitis. Cutaneous diseases were 18 in number, chiefly abscessus and furunculus. Abuse of alcoholic drinks gave one case. Injuries amounted to 20 cases, chiefly contusions, sprains, and contused wounds.

The following table shows the results of vaccination at this station:*

	Presenting evidence of small-pox.		Presenting evidence of previous vaccination.		No evidence of previous vaccination.		Total.
	Successful.	Unsuccessful.	Successful.	Unsuccessful.	Successful.	Unsuccessful.	
Total	3	7	55	48	17	6	136
Per cent. of cases	7.4		75.7		16.9		.....
Per cent. of successful	30.0		53.4		74.0		55.1

Special duty, Portsmouth, N. H.—There were only 8 cases reported; total number of sick-days 169; average duration of treatment 21.12 days; daily average number of patients .46. These 8 cases were as follows: 1 intermittent fever, 1 neuralgia, 1 conjunctivitis, 1 catarrh, 1 bronchitis, 1 epistaxis, 1 pharyngitis, and 1 of herpes.

Torpedo Station, Newport, R. I.—At this station 59 were admitted for treatment and the same number discharged cured. The number of sick-days were 370; average duration of treatment 6.27 days, and daily average number of patients 1.01. There were two cases of intermittent fever, 1 case of gout, 8 of rheumatism, 1 of neuralgia, and 1 of pterygium. There were 9 cases of disease of the respiratory organs, mostly catarrhal, and 17 of the digestive system. The majority of the latter were of cholera morbus, acute diarrhœa, and tonsillitis. But 1 case of gonorrhœa and 4 of furuncle were reported. The injuries amounted to 15, mostly contused wounds.

Special duty, New York.—There were 15 cases treated at this station; number of sick-days 495; average number of days under treatment 33, average number of patients 1.35. Of these cases there were 2 of anæmia, 1 of rheumatism, 1 of syphilis, 1 of cerebritis, 1 of neuralgia, 1 of conjunctivtis, 1 of otitis, 1 of palpitation, 1 of asthma, 1 of acute bronchitis, 1 of prolapsus ani, and 1 of tonsillitis.

Naval Station, New London, Conn.—There were but six cases reported from this station, with a total of sick-days of 48; the durationof treatment was 8 days, and the average list of patients .13. The cases were, 1 of intermittent fever, 2 of rheumatism, 1 of hordeolum, 1 of dyspepsia, and 1 of sprain.

Special duty, Philadelphia.—This duty supplied 30 cases; 27 were discharged cured, and 3 continued. Number of sick-days 693; average duration of treatment 23.1 days; daily average number of sick 1.89. There were 3 cases of malarial fever and 1 of senectus. Among the local diseases there were 8 of the nervous system, viz, dementia 1, neuralgia 5, and paralysis 2; two of the circulatory system, viz, of the cardiac valves; three of the respiratory system, viz, 2 of catarrh and 1 of pleuritis; nine of the digestive system, viz, 1 of constipatio, 2 of diarrhœa, 1 of dyspepsia, 1 of gastritis, 2 of chronic hepatitis, and 2 of tonsillitis; one of the genito-urinary system, viz, cystitis; one of the cutaneous system, psoriasis; and 2 of hernia.

Naval Academy, Annapolis, Md.—At this station there were treated 1,076, of which 1,061 were discharged cured, 2 were invalided, 2 died,

and 11 continued. The number of sick-days amounted to 5,047; average duration of treatment 4.68 days; average daily sick 13.82. Of the zymotic class there were 125 cases: 36 of epidemic catarrh, 2 of erysipelas, 5 of febricula, 76 of malarial fever, 2 of pertussis, and 4 of vaccina. The constitutional diseases gave 45 cases, viz, 9 adynamia, 2 lumbago, 1 podagra, 28 rheumatism, 3 syphilis, and 2 torticollis. Diseases of the nervous system contributed the next largest figures of affections encountered at this station. Of this class 231 cases were reported, viz, 199 of cephalalgia, 1 of mania, 24 of neuralgia, 4 of pleurodynia, and 3 of vertigo. These cases occurred among the cadet-midshipmen, and were due to circumstances connected with collegiate administration. Diseases of the eye also occupy, for the same reasons, a prominent part, there being 55 cases reported, viz, asthenopia 5, conjunctivitis 25, hordeolum 3, iritis 3, ophthalmia 18, ulcer of cornea 1. There were 6 ear cases, viz, 3 of otalgia, 1 of otitis, and 2 of otorrhœa. Of diseases of the teeth there were 16 cases of odontalgia. Among the vascular diseases there were 3 cases of syncope. There were 2 cases of adenitis and 1 of lymphangitis. Diseases of the respiratory system were also numerous, 160 cases being reported, of which one died from chronic pneumonic phthisis. There were of asthma 1, bronchitis 10, catarrh 136, epistaxis 1, hæmoptysis 2, laryngitis 1, chronic pneumonic phthisis 6, and pneumonia 3. Of the various classes of diseases met with on this station those of the digestive system are most common. There were reported 264 cases, of which 2 were invalided. The most frequent disease is acute diarrhœa, next pharyngitis, then colic, tonsillitis, dyspepsia, constipation, and cholera morbus. The genito-urinary organs gave 18 cases, viz, cystitis 2, gonorrhœa 11, orchitis 1, strictura urethræ 4. There was 1 case of synovitis. Diseases of the skin gave 50 cases, the most common being furunculus, then abscess. Alcoholic excess gave 4 cases. There were 95 cases of injury, chiefly contusions, sprains, and wounds.

Naval Dispensary, Washington, D. C.—The number of cases treated at this point was 159, of whom 153 were discharged cured, 1 died, and 5 were continued. The number of sick-days was 4,294; average number of days under treatment 27, and the average daily sick 11.76. There were 28 cases of intermittents reported among the zymotic class, and 16 cases of constitutional diseases, viz: adynamia, 4; podagra, 2; rheumatism, 10. Among the local diseases there were 8 cases of diseases of the nervous system, 4 of cerebral congestion, and 4 of neuralgia. There were 4 cases of conjunctivitis, and 8 cases of ear troubles, 6 of otitis, and 2 of otorrhœa. There were 39 cases of respiratory diseases, viz: 13 of bronchitis, 24 of catarrh, 1 of laryngitis, and 1 pneumonia. Diseases of the digestive organs numbered 34, principally of a diarrhœal and dysenteric character. The genito-urinary organs gave 3 cases of cystitis, 1 of gonorrhœa, and 1 of hydrocele. There were 9 cases of integumentary diseases, in part furuncular and carbuncular. Only one case was reported of disease from abuse of alcohol, and there were but 6 cases of injuries, sprains, and contusions.

The aggregated cases reported from the foregoing 17 naval stations reach 2,639, of which 2,422 were discharged cured, 179 invalided, 7 died, and 31 continued. The total number of sick-days was 22,351; the average duration of treatment 8.47 days, and the daily average number of sick 65.30.

The following consolidated table will show the number remaining from the previous year, those admitted and discharged, number continued to succeeding year, and their ratios.

TABLE I.

Shore stations.	Remaining from last year.	Admitted.				
		First quarter.	Second quarter.	Third quarter.	Fourth quarter.	Total treated.
Navy-yard, Portsmouth, N. H	3	16	25	16	7	67
Navy-yard, Boston Mass	2	50	26	43	33	154
Navy-yard, New York, N. Y	.....	9	2	2	6	19
Navy-yard, League Island, Pa	.....	38	31	45	17	131
Navy-yard, Washington, D. C	5	50	67	40	10	172
Navy-yard, Norfolk, Va	3	52	43	37	25	160
Navy-yard, Pensacola, Fla	.....	11	4	2	8	25
Navy-yard, Mare Island, Cal	5	21	18	22	22	88
Marine Barracks, New York, N. Y	5	97	77	85	61	325
Marine Barracks, Washington, D. C	3	38	43	42	19	145
Special duty, Portsmouth, N. H	.....	8	.....	.....	.....	8
Torpedo station, Newport, R. I	4	21	7	9	18	59
Special duty, New York, N. Y	.....	15	.....	.....	.....	15
Naval station, New London, Conn	.....	.....	2	2	2	6
Special duty, Philadelphia, Pa	2	8	5	10	5	30
Naval Academy, Annapolis, Md	12	489	252	41	282	1,076
Naval Dispensary, Washington, D. C	13	67	46	19	14	159
Total	57	990	648	415	529	2,639

Shore stations.	Discharged.				Continued.	Total number of sick-days.	Average number of days under treatment.	Daily average number of sick.
	Cured.	Invalided.	Died.	Total.				
Navy-yard, Portsmouth, N. H	57	7	1	65	2	2,044	30.50	5.6
Navy-yard, Boston, Mass	126	25	.....	151	3	988	6.41	2.70
Navy-yard, New York, N. Y	19	.....	.....	19	.....	161	8.47	.44
Navy-yard, League Island, Pa	100	30	1	131	.....	734	5.60	2.01
Navy-yard, Washington, D. C	128	44	.....	172	.....	1,084	6.30	2.97
Navy-yard, Norfolk, Va	128	32	.....	160	.....	722	4.51	1.70
Navy-yard, Pensacola, Fla	24	.....	1	25	.....	226	9.04	.61
Navy-yard, Mare Island, Cal	76	7	1	84	4	1,457	16.55	3.96
Marine Barracks, New York, N. Y	305	17	.....	322	3	2,916	8.97	7.98
Marine Barracks, Washington, D. C	130	15	.....	145	.....	903	6.22	2.47
Special duty, Portsmouth, N. H	8	.....	.....	8	.....	169	21.12	.46
Torpedo station, Newport, R. I	59	.....	.....	59	.....	370	6.27	1.01
Special duty, New York, N. Y	15	.....	.....	15	.....	495	33	1.35
Naval station, New London, Conn	6	.....	.....	6	.....	48	8	.17
Special duty, Philadelphia, Pa	27	.....	.....	27	3	693	23.1	1.89
Naval Academy, Annapolis, Md	1,061	2	2	1,065	11	5,047	4.68	13.82
Naval Dispensary, Washington, D. C	153	.....	1	154	5	4,294	27	11.76
Total	2,422	179	7	2,608	31	22,351	8.47	61.23

TABLE II.—*Showing number of admissions, discharges, and deaths, number of sick-days, duration of treatment, and daily average number of sick at the naval stations.*

Diseases and injuries.	Number of cases.	Number of sick-days.	Average number of men sick daily.	Average number of days under treatment.	Number discharged to duty.	Number invalided.	Number died.	Number continued.
GENERAL DISEASES.								
1.—Zymotic diseases.								
Catarrhus epidemicus	50	191	.52	3.82	49	1	.....	.....
Diphtheria	1	4	.01	4	1	.....	.....	.....
Erysipelas	4	64	.17	16	4	.....	.....	.....
Febricula	6	18	.04	3	6	.....	.....	.....
Febris continua simplex	5	35	.09	7	5	.....	.....	.....
Febris intermittens	271	1,574	4.31	5.80	250	19	.....	2
Febris remittens	21	191	.52	9.09	11	10	.....	.....
Morbilli	2	43	.11	21.5	2	.....	.....	.....
Parotitis	2	16	.04	8	2	.....	.....	.....
Pertussis	2	12	.03	6	2	.....	.....	.....
Vaccina	12	66	.17	5.5	12	.....	.....	.....
Total	376	2,214	6.06	5.8	344	30	.....	2
2.—Constitutional diseases.								
Adynamia	26	308	.84	11.8	19	5	2	.....
Anæmia	3	50	.13	16.6	3	.....	.....	.....
Lumbago	2	8	.02	4	2	.....	.....	.....
Podagra	4	71	.19	17.7	4	.....	.....	.....
Rheumatismus acutus	74	573	1.56	7.7	68	6	.....	.....
Rheumatismus chronicus	59	1,532	4.11	25.9	52	5	.....	2
Syphilis primitiva	30	259	.70	8.6	16	14	.....	.....
Syphilis consecutiva	31	653	1.71	21.0	17	12	.....	2
Senectus	1	7	.01	7	.....	.....	.....	1
Torticollis	2	4	.01	2	2	.....	.....	.....
Total	232	3,465	9.76	14.9	183	42	2	5
LOCAL DISEASES.								
1.—Diseases of the nervous system.								
Apoplexia	2	9	.02	4.5	2	.....	.....	.....
Cephalalgia	205	383	1.04	1.8	205	.....	.....	.....
Cerebritis	2	48	.13	24	1	.....	.....	1
Congestio cerebri	4	84	.23	21	4	.....	.....	.....
Dementia	4	4	.01	1	1	3	.....	.....
Epilepsia	3	29	.07	9.6	3	.....	.....	.....
Irritatio spinalis	2	104	.28	52	1	1	.....	.....
Mania	1	9	.02	9	1	.....	.....	.....
Melancholia	1	4	.01	4	1	.....	.....	.....
Neuralgia	65	546	1.49	8.4	64	1	.....	.....
Nostalgia	2	9	.02	4.5	2	.....	.....	.....
Paralysis	5	67	.18	13.4	2	2	.....	1
Pleurodynia	4	20	.05	5	4	.....	.....	.....
Vertigo	3	6	.01	2	3	.....	.....	.....
Total	303	1,322	3.62	4.3	294	7	.....	2
2.—Diseases of the eye.								
Asthenopia	5	298	.81	59.6	4	.....	.....	1
Conjunctivitis	46	480	.13	10.6	44	1	.....	1
Hordeolum	6	22	.06	3.6	6	.....	.....	.....
Iritis	3	42	.11	14	3	.....	.....	.....
Ophthalmia	20	129	.35	6.4	19	1	.....	.....
Pterygium	1	3	.008	3	1	.....	.....	.....
Retinitis	1	38	.10	38	1	.....	.....	.....
Ulcus cornea	1	3	.008	3	1	.....	.....	.....
Total	83	1,024	2.80	12.3	79	2	.....	2

TABLE II.—*Showing number of admissions, discharges, and deaths, etc.*—Continued.

Diseases and injuries.	Number of cases.	Number of sick-days.	Average number of men sick daily.	Average number of days under treatment.	Number discharged to duty.	Number invalided.	Number died.	Number continued.
LOCAL DISEASES—Continued.								
3.—Diseases of the ear.								
Otalgia	5	18	.04	3.6	5	.....	.....	.....
Otitis	11	223	.61	20.2	11	.....	.....	.....
Otorrhœa	4	43	.13	10.7	4	.....	.....	.....
Surditas	1	12	.03	12	.....	1	.....	.....
Total	21	296	.81	14.0	20	1	.....	.....
4.—Diseases of the teeth.								
Odontalgia	18	128	.35	7.1	18	.....	.....	.....
5.—Diseases of the circulatory system.								
Morbi valvularum cordis	8	65	.17	8.1	4	4	.....	.....
Palpitatio	6	194	.53	32.3	2	3	.....	1
Syncope	3	7	.01	2.3	3	.....	.....	.....
Varix	3	11	.03	3.6	2	1	.....	.....
Total	20	277	.75	13.8	11	8	.....	1
6.—Diseases of the absorbent system.								
Adenitis	13	232	.90	25.5	9	4	.....	.....
Lymphangitis	1	5	.01	5	1	.....	.....	.....
Total	14	237	.92	24.0	10	4	.....	.....
7.—Diseases of the respiratory system.								
Asthma	7	143	.40	20.8	6	.....	.....	1
Bronchitis acuta	57	395	1.08	6.0	55	2	.....	.....
Bronchitis chronica	11	397	1.08	36.0	7	4	.....	.....
Catarrhus	275	1,961	5.37	7.1	270	4	.....	1
Epistaxis	3	3	.008	1	3	.....	.....	.....
Hæmoptysis	5	21	.05	4.2	4	1	.....	.....
Laryngitis	4	37	.10	9.2	3	.....	.....	1
Phthisis pneumonica chronica	15	509	1.39	33.9	10	3	1	1
Pleuritis	6	95	.26	15.8	6	.....	.....	.....
Pneumonia	14	465	1.27	33.2	7	6	1	.....
Total	397	4,029	11.04	10.1	371	20	2	4
8.—Diseases of the digestive system.								
Ascites	2	52	.14	26	2	.....	.....	.....
Cholera morbus	28	65	.17	2.3	27	1	.....	.....
Colica	73	197	.53	2.6	73	.....	.....	.....
Colitis	1	20	.01	20	.....	.....	.....	1
Congestio hepatis	2	14	.03	7	2	.....	.....	.....
Constipatio	25	56	.15	2.2	24	1	.....	.....
Diarrhœa acuta	192	746	2.04	3.8	189	2	.....	1
Diarrhœa chronica	7	199	.54	28.4	5	2	.....	.....
Dysenteria acuta	27	119	.32	4.4	26	1	.....	.....
Dysenteria chronica	3	46	.12	153	2	1	.....	.....
Dyspepsia	32	256	.70	8	30	.....	.....	2
Enteritis	1	2	.....	2	.....	1	.....	.....
Fauces ulcerosa	4	43	.11	10.7	4	.....	.....	.....
Fistula in ano	2	4	.01	21	1	1	.....	.....
Gastritis	5	13	.03	2.6	5	.....	.....	.....
Hæmorrhois	25	183	.50	7.3	20	4	.....	1
Hepatitis acuta	1	8	.02	8	1	.....	.....	.....
Hepatitis chronica	2	9	.02	4.5	2	.....	.....	.....
Icterus	2	15	.04	7.5	2	.....	.....	.....
Peritonitis	2	6	.01	3	1	.....	1	.....
Pharyngitis	85	240	.69	2.8	85	.....	.....	.....

TABLE II.—*Showing number of admissions, discharges, and deaths, &c.*—Continued.

Diseases and injuries.	Number of cases.	Number of sick-days.	Average number of men sick daily.	Average number of days under treatment.	Number discharged to duty.	Number invalided.	Number died.	Number continued.
LOCAL DISEASES—Continued.								
8.—*Diseases of the digestive system*—Cont'd.								
Prolapsus ani	1	12	.03	12	1	.....	.....	.....
Rhagades ani	2	27	.07	13.5	1	.....	.....	1
Stomatitis	1	10	.02	10	1	.....	.....	.....
Tonsillitis	82	477	1.30	5.8	81	1	.....	.....
Total	607	2,819	7.72	4.6	585	15	1	6
9.—*Diseases of the genito-urinary system.*								
Albuminuria	4	6	.01	1.5	.....	2	2	.....
Balanitis	2	2	.....	1	.....	1	.....	1
Chancroid	10	129	.35	12.9	10	.....	.....	.....
Cystitis	13	226	.61	17.3	12	1	.....	.....
Gonorrhœa	55	432	1.18	8.1	47	6	.....	2
Hæmaturia	3	9	.02	3	2	1	.....	.....
Hydrocele	1	3	.....	3	.....	.....	.....	1
Nephritis	1	2	.....	2	.....	1	.....	.....
Orchitis	13	260	.71	20	10	3	.....	.....
Paraphymosis	2	30	.08	15	1	1	.....	.....
Phymosis	3	47	.12	15.6	3	.....	.....	.....
Urethræ strictura	8	167	.45	20.8	7	.....	.....	1
Total	115	1,313	3.59	11.4	92	16	2	5
10.—*Diseases of the locomotive system.*								
Periostitis	3	16	43	5.3	2	1	.....	.....
Synovitis	2	6	.01	3	2	.....	.....	.....
Total	5	22	.60	4.4	4	1	.....	.....
11.—*Diseases of the integumentary system.*								
Abscessus	23	920	2.5	40	22	1	.....	.....
Anthrax	8	160	.43	20	8	.....	.....	.....
Ecthyma	5	17	.04	3.4	4	1	.....	.....
Eczema	8	47	.12	5.8	7	1	.....	.....
Ecthyma	2	10	.02	5	1	1	.....	.....
Furunculus	48	473	1.29	9.8	47	1	.....	.....
Herpes	4	80	.21	20	4	.....	.....	.....
Onychia	2	3	.....	1.5	2	.....	.....	.....
Paronychia	5	65	.17	13	5	.....	.....	.....
Pemphigus	1	1	.....	1	.....	1	.....	.....
Pernio	1	18	.04	18	1	.....	.....	.....
Prurigo	3	31	.08	10.3	2	1	.....	.....
Psoriasis	1	8	.02	8	1	.....	.....	.....
Purpura simplex	1	12	.03	12	1	.....	.....	.....
Scabies	2	9	.02	4.5	2	.....	.....	.....
Sycosis	1	45	.12	45	1	.....	.....	.....
Ulcus	5	37	.10	7.4	4	1	.....	.....
Unguis involutis	2	25	.06	12.5	2	.....	.....	.....
Urticaria	1	2	.....	2	1	.....	.....	.....
Total	123	1,963	5.37	15.95	115	8	.....	.....
Poisons.								
Alcoholismus	3	9	.02	3	3	.....	.....	.....
Ebriositas	47	175	.47	3.7	41	6	.....	.....
Total	50	184	.50	3.6	44	6	.....	.....
12.—*Violent diseases and deaths.*								
Abrasio	22	229	.62	10.4	21	.....	.....	1
Ambustio	7	51	.13	7.2	6	1	.....	.....
Congelatio	4	34	.09	8.5	4	.....	.....	.....
Contusio	72	729	1.97	10	66	4	.....	2
Explosio	1	2	.....	2	1	.....	.....	.....

TABLE II.—*Showing number of admissions, discharges, and deaths, etc.*—Continued.

Diseases and injuries.	Number of cases.	Number of sick-days.	Average number of men sick daily.	Average number of days under treatment.	Number discharged to duty.	Number invalided.	Number died.	Number continue
LOCAL DISEASES—Continued.								
12.—*Violent diseases and deaths*—Cont'd.								
Fractura	7	145	.39	20.7	3	3	.....	1
Hernia	10	184	.50	18.4	6	4	.....	.....
Luxatio	6	120	.32	20	6	.....	.....	.....
Stremma	73	757	2.07	10.3	67	6	.....	.....
Submersio	1	2	.....	2	1	.....	.....	.....
Venenatio	2	31	.08	15.5	2	.....	.....	.....
Vulnus contusum	31	321	.87	10.3	31	.....	.....	.....
Vulnus incisum	12	141	.38	11.1	12	.....	.....	.....
Vulnus laceratum	16	151	.40	9.4	15	1	.....	.....
Vulnus punctum	9	46	.12	5.1	9	.....	.....	.....
Vulnus sclopetarium	1	6	.01	6	1	.....	.....	.....
Vulnus venenatum	1	18	.49	18	1	.....	.....	.....
Total	275	2,958	8.10	10.7	252	10	.....	4
Grand total	2,639	22,351	61.23	8.47	2,422	179	7	31

TABLE III.—*Showing the number of admissions, invalided,*

Diseases and injuries.	Portsmouth navy-yard.			Boston navy-yard.			New York navy-yard.			League Island navy-yard.			Washington navy-yard.			Norfolk navy-yard.			Pensacola navy-yard.		
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
GENERAL DISEASES.																					
1.—*Zymotic diseases.*																					
Catarrhus epidemicus																14	1				
Diphtheria																1	1				
Erysipelas																					
Febricula																1					
Febris continua simplex	2									1											
Febris intermittens				11	2		1			44	5		36	6		17	3		6		
Febris remittens													5	1		7	5				
Morbilli													1			1					
Parotitis																2					
Pertussis																					
Vaccina																					
Total	2			11	2		1			44	5		42	7		43	10		6		
2.—*Constitutional diseases.*																					
Adynamia				1	1					1	1		1	1		1	1		4		
Anæmia	1																				
Lumbago																					
Podagra																					
Rheumatismus acutus	6			9	1		2			1			4	1		6	1				
Rheumatismus chronicus	8	2		1						1	1					5					
Syphilis primitiva	2			1						5	5		4	3		3	1				
Syphilis consecutiva	3	1		4	4					1	1		1	1		5	3				
Senectus																					
Torticollis																					
Total	20	3		15	6		2			9	8		10	6		20	6		4		
LOCAL DISEASES.																					
1.—*Diseases of the nervous system.*																					
Apoplexia																2					
Cephalalgia													2			1					
Cerebritis																1					
Congestio cerebri																					
Dementia										1	1		1	1		1	1				
Epilepsia																1					
Irritatio spinalis	1			1	1																
Mania																					
Melancholia	1																				
Neuralgia	2	1		4						1			7			3			3		
Nostalgia							1														
Paralysis				1	1					1	1										
Pleurodynia																					
Vertigo																					
Total	4	1		6	2		1			3	2		10	1		9	1		3		
2.—*Diseases of the eye.*																					
Asthenopia																					
Conjunctivitis	1			3	1											1					
Hordeolum				1																	
Iritis																					
Ophthalmia													1								
Pterygium																					
Retinitis	1																				
Ulcus corneæ																					
Total	2			4	1								1			1					

dead for each disease and injury at the several naval stations.

	Marine barracks, New York.			Marine barracks, Washington, D. C.			Special duty, Portsmouth, N. H.			Torpedo station, Newport, R. I.			Special duty, New York.			Naval station, New London, Conn.			Special duty, Philadelphia, Pa.			Naval Academy, Annapolis, Md.			Naval dispensary, Washington, D. C.			Grand total.		
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
																						36						50	1	
	1																											1	1	
	2																					5						4		
																												6		
	28			19	3		1			2						1						75			28			271	19	
	4	2		1	1														3			1					21	9	
																												2		
																												2		
	6			2																		2						12		
	41	2		22	4		1			2						1			3			125			28			376	30	
	1			3	1								2									9		1	4		1	26	5	2
																												3		
																						2						2		
										1												1			2			4		
	5			5	3					6						1						22			5			74	6	
	17			5						2			1			1						6			5			59	5	
	7			4	4																	1						30	13	
	9	1		2									1						1			2						31	12	
																												1		
																						2						2		
	39	1		19	8					9			4			2			1			45		1	16		1	232	41	2
																												2		
				3																		199						205		
													1															2		
																									4			4		
																			1									4	3	
	1																											3		
																												2	1	
																						1						1		
																												1		
	4			3			1			1			1						5			24			4			65	1	
	1																		2									2		
	1																					5						5	2	
																						4						4		
																						3						3		
	7			6			1			1			2						8			231			8			303	7	
																						5						5		
	6			2			1						1									25			5			46	1	
	1															1						3						6		
																						3						3		
	1	1																				18						20	1	
										1																		1		
																												1		
																						1						1		
	8	1		2			1			1			1			1						55			5			83	2	

TABLE III.—*Showing the number of admissions, invalided, and dead for*

Diseases and injuries.	Portsmouth navy-yard.			Boston navy-yard.			New York navy-yard.			League Island navy-yard.			Washington navy-yard.			Norfolk navy-yard.			Pensacola navy-yard.		
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
LOCAL DISEASES—Continued.																					
3.—Diseases of the ear.																					
Otalgia				2																	
Otitis							1			1											
Otorrhœa																					
Surditas													1	1							
Total				2			1			1			1	1							
4.—Diseases of the teeth.																					
Odontalgia																					
5.—Diseases of the circulatory system.																					
Morbi valvularum cordis				2	2		1						2	2							
Palpitatio				2	1								1	1		1	1				
Syncope																					
Varix										1	1		2								
Total				4	3		1			1	1		5	3		1	1				
6.—Diseases of the absorbent system.																					
Adenitis													1			3	3				
Lymphangitis																					
Total													1			3	3				
7.—Diseases of the respiratory system.																					
Asthma	1																				
Bronchitis acuta				6	1		1			5			1			6			2		
Bronchitis chronica	2	2								1	1		2								
Catarrhus	3			15			2			3			20	4		2					
Epistaxis				1																	
Hæmoptysis				1	1					1											
Laryngitis																					
Phthisis pneumonica chronica				3	2								1								
Pleuritis				2						1											
Pneumonia	1									3	2	1	1	1		1	1				
Total	7	2		28	4		3			14	3	1	25	5		9	1		2		
8.—Diseases of the digestive system.																					
Ascites																			2		
Cholera morbus	1			4	1					1									1		
Colica				2			1						3			5					
Colitis																					
Congestio hepatis										1											
Constipatio							1			1			1	1		1					
Diarrhœa acuta	3						1			8			26	2		13					
Diarrhœa chronica										1	1										
Dysenteria acuta				13	1											7			1		
Dysenteria chronica	1																				
Dyspepsia				1			1			4											
Enteritis																					
Fauces ulcerosa							1														
Fistula in ano																1	1				
Gastritis				1												4					
Hæmorrhois	3			3						5			5	4		1					
Hepatitis acuta										1											

each disease and injury at the several naval stations—Continued.

Mare Island navy-yard.			Marine barracks, New York.			Marine barracks, Washington, D. C.			Special duty, Portsmouth, N. H.			Torpedo station, Newport, R. I.			Special duty, New York.			Naval station, New London, Conn.			Special duty, Philadelphia, Pa.			Naval Academy, Annapolis, Md.			Naval dispensary, Washington, D. C.			Grand total.		
Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
																								3						5		
			1												1									1			6			11		
																								2			2			4		
																														1	1	
			1												1									6			8			21	1	
						2																		16						18		
						1															2									8	4	
						1									1															6	3	
																								3						3		
																														3	1	
						2									1						2			3						20	8	
2			5	2																				2						13	5	
																								1						1		
2			5	2																				3						14	5	
2			12												1									1						7		
			7			4	1		1			2			1									9			12			57	2	
			3			1	1																	1			1			11	4	
10			41			10			1			6									2			130			24			275	4	
									1															1						3		
			1																					2						5	1	
			1			1																		1			1			4		
4	1					1																		6		1				15	3	1
						1						1									1									6		
			2	2		2																		3			1			14	6	1
16	1		57	2		20	2		3			9			2						3			160		1	39			397	20	2
																														2		
			8			2						1												10						28	1	
			1			11						6												42			2			73		
																											1			1		
			4																					1			1			2		
6			30			10						3									1			15			1			25	1	
2																					1			77			13			102	2	
			1			1																		2	1		2			7	2	
																								2			2			27	1	
2			1			2						1						1			1			2	1					3	1	
1	1																							16			2			32		
												1																		1	1	
																								2						4		
																											1			2	1	
1			2																					2			2			5		
																														25	4	
																														1		

TABLE III.—*Showing the number of admissions, invalided, and deat*

Diseases and injuries.	Portsmouth navy-yard.			Boston navy-yard.			New York navy-yard.			League Island navy-yard			Washington navy-yard.			Norfolk navy-yard.			Pensacola navy-yard.		
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
LOCAL DISEASES—Continued.																					
8.—*Diseases of the digestive system*—Cont'd.																					
Hepatitis chronica																					
Icterus																					
Peritonitis																			1		1
Pharyngitis																					
Prolapsus ani																					
Rhogades ani							1														
Stomatitis																					
Tonsillitis	3			3			3			3						1	1				
Total	11			27	2		9			25	1		35	7		33	2		5		1
9.—*Diseases of the genito-urinary system.*																					
Albuminuria	1		1													2	2				
Balanitis													1	1							
Chancroid				1																	
Cystitis													2						3		
Gonorrhœa	3			4						5	3		5	3		7					
Hæmaturia										1						1					
Hydrocele																					
Nephritis																1	1				
Orchitis	3															2	2				
Paraphymosis																					
Phymosis																1					
Urethræ strictura	1																		1		
Total	8		1	5						6	3		8	4		14	5		4		
10.—*Diseases of the locomotor system.*																					
Periostitis										2	1										
Synovitis													1								
Total										2	1		1								
11.—*Diseases of the integumentary system.*																					
Abscessus																			1		
Anthrax										1			1								
Ecthyma										1	1										
Eczema				2	1								1								
Erythema																2	1				
Furunculus				2			1			6	1					5					
Herpes													1								
Onychia																					
Paronychia										1											
Pemphigus													1	1							
Pernio																					
Prurigo													1	1							
Psoriasis																					
Purpura simplex																					
Scabies																					
Sycosis																					
Unguis involutis																					
Ulcus										1						1	1				
Urticaria																					
Total				4	1		1			10	2		5	2		8	2		1		

for each disease and injury at the several naval stations—Continued.

Mare island navy-yard.			Marine barracks, New York.			Marine barracks, Washington, D. C.			Special duty, Portsmouth, N. H.			Torpedo station, Newport, R. I.			Special duty, New York.			Naval station, New London, Conn.			Special duty, Philadelphia, Pa.			Naval Academy, Annapolis, Md.			Naval dispensary, Washington, D. C.			Grand total.		
Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	2	...	...
...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	2	...	1
1	...	...	16	...	...	8	...	...	1	...	...	1	...	...	1	...	...	...	...	...	...	...	...	36	...	...	2	...	...	85	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	2	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...
1	...	...	15	...	...	6	...	...	...	...	...	4	...	...	1	...	...	...	...	...	2	...	...	36	...	...	4	...	...	82	1	...
14	1	..	79	..	..	41	..	..	1	..	..	17	..	..	2	..	..	1	..	..	9	..	..	264	2	..	34	..	..	607	15	1
1	..	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	2	2
...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	...
...	...	...	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10	...	...
1	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	2	...	...	3	...	...	13	1	...
1	...	...	16	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	11	...	...	1	...	...	55	6	...
...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	1	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...
2	...	...	4	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	13	3	...
...	...	...	1	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	...
1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...
1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	8	...	...
7	..	1	35	3	..	3	1	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	..	18	..	..	5	..	..	115	16	2
...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	2	...	...
...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	5	1	...
...	...	...	4	1	...	1	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	15	...	...	...	...	...	23	1	...
1	...	...	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	2	...	...	8	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	3	...	...	5	1	...
...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	8	1	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	...
1	...	...	7	...	...	3	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	18	...	...	3	...	...	48	1	...
...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	4	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	2	...	...
...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	5	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...
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...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	3	1	...
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1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	2	...	...
...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	5	1	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...
3	...	..	18	1	..	7	...	..	1	...	..	4	...	..	1	...	..	...	...	..	1	...	..	50	...	..	9	...	..	123	8	...

TABLE III.—*Showing the number of admissions, invalided, and*

Diseases and injuries.	Portsmouth navy-yard.			Boston navy-yard.			New York navy-yard.			League Island navy-yard.			Washington navy-yard.			Norfolk navy-yard.			Pensacola navy-yard.		
	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
LOCAL DISEASES—Continued.																					
POISONS.																					
Alcoholismus	1	..	..	8	..	..	..	..	..	8	3	..	12	..	..	1	..	..	..	..	..
Ebriositas	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..
Total	1	..	..	8	..	..	..	..	..	8	3	..	12	..	..	4	..	..	..	..	..
VIOLENT DISEASES AND DEATHS.																					
Abrasio	..	..	..	7	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..
Ambustio	..	..	..	..	..	..	..	..	..	1	..	..	1	1	..	1	..	..	..	..	..
Congelatio	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..
Contusio	6	..	..	7	..	..	..	..	..	1	..	..	6	4	..	1	..	..	..	..	..
Explosio	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Fractura	1	..	..	2	1	..	..	..	..	..	..	..	1	1	..	1	1	..	..	..	..
Hernia	2	1	..	..	..	..	..	..	..	..	..	..	2	2	..	..	..	..	..	..	..
Luxatio	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Stremma	3	..	..	19	3	..	..	..	..	..	..	..	3	..	..	6	..	..	..	..	..
Submersio	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Venenatio	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Vulnus contusum	..	..	..	3	..	..	..	..	..	..	..	..	1	..	..	3	..	..	..	..	..
Vulnus incisum	..	..	..	2	..	..	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..
Vulnus laceratum	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	1	..	..	..	..	..
Vulnus punctum	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
Vulnus sclopetarum	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Vulnus venebratum	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Aggregate	12	1	..	40	4	..	..	..	..	7	1	..	16	8	..	15	1	..	..	..	..
Grand aggregate	67	7	1	154	25	..	19	..	..	131	30	1	172	44	..	160	32	..	25	..	1

dead for each disease and injury at the several naval stations—Continued.

Maro Island navy-yard.			Marine barracks, New York.			Marine barracks, Washington, D. C.			Special duty, Portsmouth, N. H.			Torpedo station, Newport, R. I.			Special duty, New York.			Naval station, New London, Conn.			Special duty, Philadelphia, Pa.			Naval Academy, Annapolis, Md.			Naval dispensary, Washington, D. C.			Grand total.		
Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.	Cases.	Invalided.	Died.
4	1	..	7	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..	1	..	..	47	6	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..
4	1	..	7	2	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..	1	..	..	50	6	..
1	..	..	..	..	..	5	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	6	..	..	..	..	..	22	..	..
1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	7	1	..
..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..
4	..	..	1	..	..	5	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	38	..	..	1	..	..	72	4	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	7	3	..
..	..	..	2	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	2	..	..	10	4	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..	..	..	..	6	..	..
5	1	..	12	2	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	18	..	..	3	..	..	73	6	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..
..	..	..	8	..	..	1	..	..	..	..	..	10	..	..	..	..	..	..	..	..	..	..	..	5	..	..	..	..	..	31	..	..
..	..	..	1	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	5	..	..	..	..	..	12	..	..
3	..	..	..	..	..	3	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	8	..	..	..	..	..	16	1	..
..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	..	..	..	..	..	9	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..
18	1	..	27	3	..	20	..	..	..	..	..	15	..	..	1	..	..	1	..	..	2	..	..	95	..	..	6	..	..	275	19	..
88	7	1	325	17	..	145	15	..	8	..	..	59	..	..	15	..	..	6	..	..	30	..	..	1,076	2	2	159	..	1	2,639	179	7

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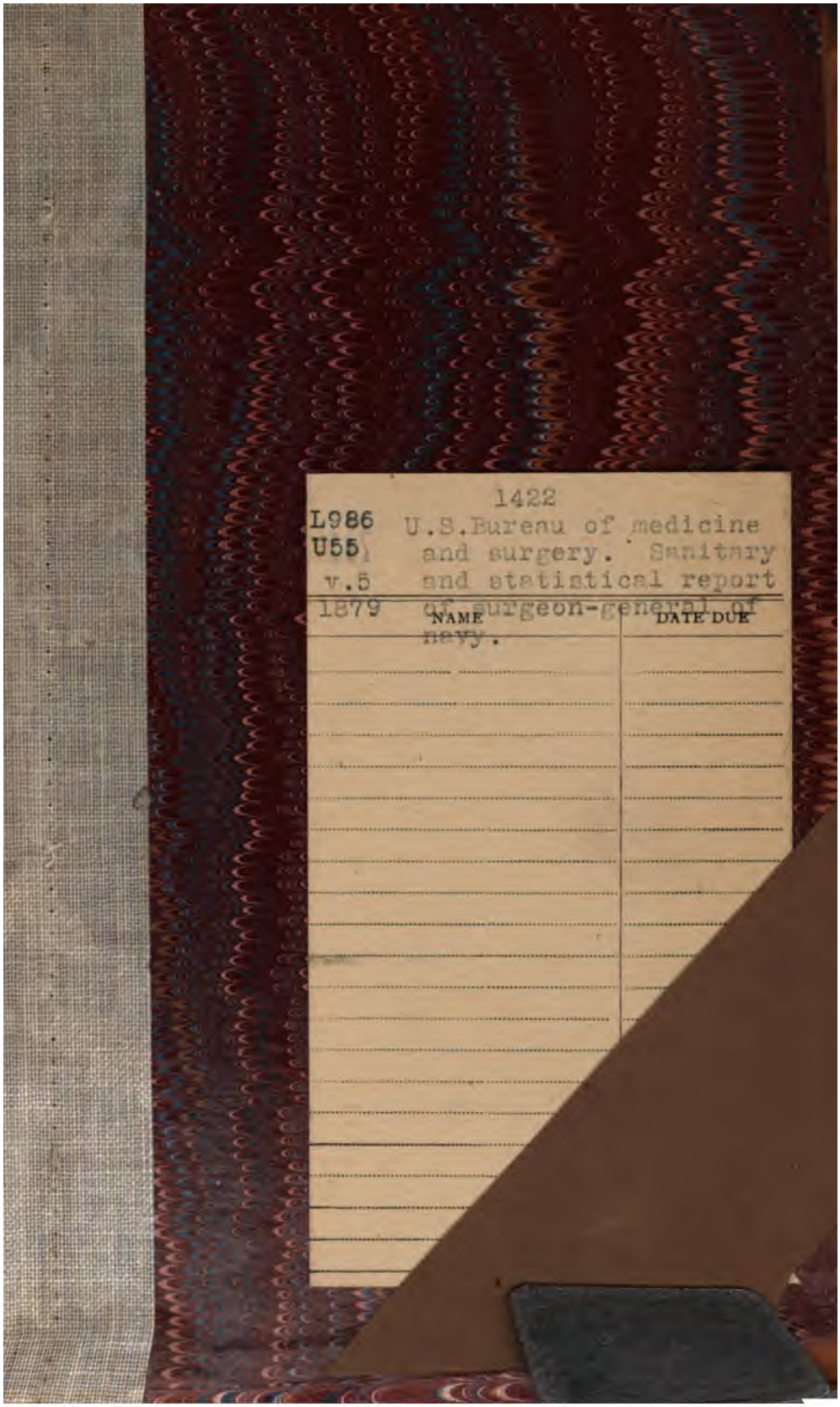
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